

AIR NATIONAL GUARD



2012

WEAPONS SYSTEMS MODERNIZATION PRIORITIES

GUARDING AMERICA * DEFENDING FREEDOM



FOREWORD




America relies on the Air National Guard for a wide range of federal missions and unexpected domestic contingencies. The Air Guard is an integral part of the Air Force, defending our nation and providing a myriad of capabilities supporting state and local authorities in protecting life and property. A combat ready Air National Guard ensures the American people have ready access to cost effective relevant defense and domestic response capabilities.

For more than 375 years, the National Guard has been an integral part of our nation's defense. Today we function as a ready and reliable operational reserve, while continuing to robust our strategic surge capability. Our Airmen have demonstrated their resolve by responding to the call in Iraq, Afghanistan, Libya, and countless other locations around the globe, resulting in a fundamental shift in the way the men and women of the Air Guard serve. Our National Guard Airmen want nothing more for the future than to continue to serve their country, state and local community. They are dedicated to ensuring the Air National Guard remains an essential element of the Total Force, and at the same time, a cost-effective force.



To that end, over 1000 warfighters and support personnel attended the 2011 Air Reserve Component Weapons and Tactics Conference. These front-line experts identified the critical material capabilities they need to successfully perform their mission and this book documents those capability gaps. This year's conference theme, "Tactics and Integration," accurately captures how the Air National Guard leverages its core strengths to modernize existing weapons systems, keeping them relevant and effective across the full spectrum of military operations and ready for tomorrow's battles. Furthermore, our solutions have been evaluated to ensure maximum efficiencies and integration into established platforms seamlessly, thereby enabling immediate mission impact and unparalleled agility.

Our Airmen demonstrate every day the tremendous value the ANG provides for America. They have proven they are up to any challenge, across the spectrum of conflict, whether it is home or abroad. We must continue to adapt to the dynamic strategic and domestic environments to meet the challenges to our nation's security. I am incredibly proud of today's Air National Guard.


HARRY M. WYATT III
Lieutenant General, USAF
Director, Air National Guard

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If you have any questions or comments about the information presented here, please forward them to our Email: NGBA5.workflow@ang.af.mil for more information.



TABLE OF CONTENTS



Table of Contents	i
Introduction	v
Weapons Systems Modernization Requirements	vi
Weapons Systems Reference Table by State	xv
Contacts	xvi
TAB A - A-10 Thunderbolt II Overview	1
2011 Weapons and Tactics Requirements List	2
Executive Summary	3
A-10 Low Cost, Day/Night Helmet Mounted Integrated Targeting (HMIT)	4
A-10 Electronic Warfare Suite	5
A-10 Fully Integrated Communications Suite	6
A-10 Lightweight Airborne Recovery System (LARS) Upgrade	7
A-10 Anti-Jam Embedded Global Positioning System/Inertial Navigation System (EGI)	8
A-10 Integrated Advanced Targeting Pod/High Resolution Display	9
A-10 Engine Modernization and Enhancement	10
TAB B - Command and Control (C2) Overview	11
2011 Weapons and Tactics Requirements List	12
Executive Summary	13
Theater Deployable Communications (TDC)	14
Power Distribution Panel System (PDPS)	15
Tactical Quiet Generators (TQG)	16
Air Operations Center (AOC) Targeting Applications	17
Air Defense Sector (ADS) Tactical Satellite (TACSAT)	18
AOC Joint Range Extension (JRE)	19
TAB C - C-5 Galaxy and C-17 Globemaster II Overview	21
2011 Weapons and Tactics Requirements List	22
Executive Summary	23
C-5 Structural Modernization	25
C-5 and C-17 Real-Time in the Cockpit (RTIC) and Data Link (DL)	26
C-5 and C-17 Large Aircraft Infrared Countermeasures (LAIRCM) and Next Generation Threat Detection System	27
C-17 Class III Electronic Flight Bag (EFB)	28
C-5 Brake Temperature Monitoring System (BTMS)	29
C-17 Radar Warning Receiver (RWR)	30
TAB D - C-130H/J Hercules and C-27J Spartan Overview	31
2011 Weapons and Tactics Requirements List	32
Executive Summary	33
C-130H Real-Time Information in the Cockpit	35
C-130H/J Advance Large Aircraft Infrared Countermeasures / Missile Approach Warning System with Hostile Fire Indicator	36
C-130H/J Single Pass Precision Guided Airdrop	37
C-130H Night Vision Imaging System Improvement	38
C-130H Advanced Radar Warning Receiver	39
C-130H Terrain Awareness Warning System	40
C/LC-130/H/J Loadmaster Crashworthy Seat	41

C-130J High Pressure Portable Oxygen Bottle	42
C-130J Cargo Compartment Camera	43
C-130J Increased Firefighting Safety	44
C-27J Loadmaster Armor / C-130H/J Aircraft Armor	45
C-27J Enhanced Situational Awareness Displays	46
C-27J Operational Flight Program (OFP) Software Upgrades	47
C-27J Certified Heads Up Display (HUD) / Primary Flight Display (PFD)	48
TAB E - EC/HC/MC/LC-130 Special Mission Overview	49
2011 Weapons and Tactics Requirements List	50
Executive Summary	51
EC-130J Large Aircraft Infrared Countermeasures (LAIRCM) Self Protection Suite	53
EC-130J Special Airborne Mission Installation and Response Arm / Pod	54
EC-130J Integrated Satellite Communication Radios	55
EC-130J Increased Aircraft Fuel Capacity	56
HC/MC-130P/N Integrated BLOS/SLOS Data Link	57
HC/MC-130P/N Electro Optical / Infrared (EO/IR) Sensor Upgrade with Video Data Link (VDL)	58
HC/MC-130P/N Integrated Electronic Counter Measure Suite with Hostile Fire Indicator and Virtual Electronics Combat Training System (VECTS)	59
HC/MC-130P/N Combat Survivable Cargo Compartment	60
HC/MC-130P/N Enhanced Engine and Propeller Performance	61
LC-130H Eight Bladed Propeller Replacement	62
LC-130H Electronic Propeller Control System	63
LC-130H Special Airborne Mission Installation and Response and Crevasse Detection Radar	64
EC-130J Enhanced Situational Awareness System	65
LC-130H In-Flight Propeller Balancing	66
LC-130H Jet Assisted Take-Off Program	67
TAB F - C-32B Gatekeeper and E-8C JSTARS Overview	69
2011 Weapons and Tactics Requirements List	70
Executive Summary	71
E-8C Organic Combat Identification Capability for Targeting	72
E-8C Interoperability with Commercial Software Programs	73
E-8C Mission Radio Calibration Tool	74
E-8C Integrated Broadcast Service	75
E-8C Multi-Agency Communication Capability (MACC)	76
C-32B Upgraded Satellite Communication System with Secure Ku Bandwidth	77
C-32B Communications Management System (CMS) Replacement	78
TAB G - F-15 Eagle and F-22 Raptor Overview	79
2011 Weapons and Tactics Requirements List	80
Executive Summary	81
F-15 Active Electronically Scanned Array (AESA) Radar	82
F-15 Infrared Search-and-Track (IRST) System	83
F-15 Improved Operational Flight Program (OFP) Development / Fielding Process	84
F-15 Cockpit Upgrades Displays and Advanced Targeting Pod (ATP) Integration	85
F-15 Modernized Self-Protection Suite	86
TAB H - F-16 Fighting Falcon Overview	87
2011 Weapons and Tactics Requirements List	88
Executive Summary	89
F-16 Integrated Sensor Enhancements - Active Electronically Scanned Array (AESA) Radar	91
F-16 Sensor Enhancements - Block 30/32/40/42 Advanced Identification Friend/Foe (AIFF)	92
F-16 Integrated Sensor Enhancements - Infrared Search-and-Track (IRST) Pod	93
F-16 Integrated Electronic Warfare Suite	94
F-16 Advanced Targeting Pod	95

F-16 Secure Line-Of-Sight (SLOS) and Beyond Line-Of-Sight (BLOS) with 3-D Audio Communications	96
F-16 Day/Night Compatible Helmet Mounted Integrated Targeting	97
F-16 Additional High Resolution Display	98
TAB I - HH-60G Pave Hawk Overview	99
2011 Weapons and Tactics Requirements List	100
Executive Summary	101
HH-60G Improved Communication Suite with 3-D Audio	102
HH-60G Integrated Flight Deck SMFCD / SADL / LARS V12	103
HH-60G Hostile Fire Indicator with Enhanced Defensive Systems Suite	104
HH-60G Improved/Advanced Weapons Systems	105
HH-60G Helmet Mounted Cueing/Point Designation	106
TAB J - KC-135 Stratotanker Overview	107
2011 Weapons and Tactics Requirements List	108
Executive Summary	109
KC-135 Advanced Infrared Countermeasures Defensive Systems	110
KC-135 Tactical Data Link and Situational Awareness Cockpit Display Units	111
KC-135 Fuel Tank Fire Explosion Protection	112
KC-135 External Overt/Covert Lighting	113
Tab K - Logistics Overview	115
2011 Weapons and Tactics Requirements List	116
Executive Summary	117
C-130 Isochronal Inspection Stands	118
SATCOM Radio Support Capability	119
Multiple MDS Leak Detection Capability	120
Obsolete Support Equipment	121
Advanced Support Equipment	122
TAB L - Intelligence Surveillance and Reconnaissance (ISR) Systems Overview	123
2011 Weapons and Tactics Requirements List	124
Executive Summary	125
RC-26B Mission Management System	127
RC-26B Avionics Modernization	128
RC-26B Communications Suite	129
RC-26B Dual Sensor Capability	130
RC-26B Late Generation Supportable Self-Protection System (SPS)	131
Senior Scout Receiver Modernization	132
Senior Scout Multi-Phased Array Antenna (Beamformer)	133
Senior Scout Rip and Identification of Pre-Detection Recordings (RIPR)	134
Senior Scout High Frequency Communication Geolocation	135
Senior Scout Skyhawk Copy	136
Distributed Ground System Fully Integrated Suite of AFSOC	137
Distributed Ground System Ability to Rapidly Generate CAT-1 Coordinates Support Equipment and Software Loads	138
TAB M - Operational Support Aircraft (OSA) Overview	139
2011 Weapons and Tactics Requirements List	140
Executive Summary	141
C-38A Replacement Aircraft Program	142
C-40C Procurement	143
C-40C High Speed Data (HSD)	144
C-40C Electronic Flight Bag (EFB)	145
TAB N - Guardian Angel, Special Tactics, Security Forces and Tactical Air Control Party Overview	147

2011 Weapons and Tactics Requirements List	148
Executive Summary	149
Guardian Angel Upgrade Combat Survivability Suite	151
Guardian Angel Improved Recovery Vehicles	152
Guardian Angel Modernized Personnel Locator Tools	153
Special Tactics Dismounted Operator Suite	154
Special Tactics Heavy Weapons Improvement	155
Special Tactics Employment Enhancement Suite	156
Special Tactics Universal Data Link	157
Security Forces Small Arms Training Simulated Munitions	158
Security Forces Handheld Electronic Explosive Detection Kit	159
Security Forces Less-Than-Lethal Equipment	160
Security Forces Mobility Bag Upgrades	161
Security Forces Small Arms Range Solution	162
Tactical Air Control Party Dismounted Interoperable Sensor Acquisition Suite	163
Tactical Air Control Party Handheld Day/Night Laser Coded Spot Tracker	164
Tactical Air Control Party Lightweight Handheld Laser Target Range Finder	165
Tactical Air Control Party Rapidly Deployable Joint Operational Communications Suite	166
Tactical Air Control Party Next Generation Handheld Joint Terminal Attack Controllers (JTAC) Radio	167
TAB O - MQ-1 Predator and MQ-9 Reaper Overview	169
2011 Weapons and Tactics Requirements List	170
Executive Summary	171
MQ-1/MQ-9 Multi-Level Secure Communications Suite	172
MQ-1/MQ-9 Collaborative Mission Execution Framework	173
MQ-1/MQ-9 Independent and Redundant Data Architectures	174
MQ-1/MQ-9 Squadron Operations Center Baseline	175
MQ-1/MQ-9 Rapidly Deployable RPA Capability	176
TAB P - Simulation, Distributed Mission Operations and Range Instrumentation Overview	177
2011 Weapons and Tactics Requirements List	178
Executive Summary	179
Joint Terminal Attack Controllers (JTAC) Simulation and Distributed Mission Operations Training and Rehearsal System	181
Guardian Angel Scenario Training Suite	182
Special Tactics Training Enhancement Suite	183
Battle Control Center (BCC) Distributed Mission Operations	184
Air Operations Center (AOC) Communications Training Lab	185
C-130J/KC-135R Advanced Squadron Level Simulator (ASLS) System	186
KC-135 Boom Operator Simulation System (BOSS)	187
“Rangeless” Air Combat Maneuvering Instrumentation	188
Range Mobile High Fidelity Threat Simulators	189
Range High Fidelity Surrogate Targets	190
Range Moving Targets	191
Range Communications and Tactical Data Link (CTDL) Architecture Support	192
TAB Q - Space, Cyber and Information Operations (IO) Overview	193
2011 Weapons and Tactics Requirements List	194
Executive Summary	195
Space Eagle Vision Next Generation	196
Space Domain Infrastructure Capability Enhancement (DICE)	197
Cyber and Critical Infrastructure Range (CCIR)	198
Cyber Adversary Replication Kit (ARK)	199
Cyber Remote Access Toolset (RAT)	200
Cyber Immersive Telepresence for Distributed Operations (ITDO)	201
Cyber Virtualized Cyber Environment (VCE)	202



INTRODUCTION



The 2012 ANG Weapons Systems Modernization Priorities Book documents capability priorities highlighted during the September 2011 Air Reserve Component Weapons and Tactics (WEPTAC) Conference. WEPTAC hosted over 1000 attendees including representatives from all Air National Guard (ANG) and Air Force Reserve units and weapons systems. The conference results captured in this book cover all aspects of ANG modernization beginning in January 2012.

The 2012 Book is organized by weapon system and includes seventeen individual Tabs. Each tab begins with a summary page of WEPTAC Critical, Essential, and Desired capabilities.

Critical

- Crucial to meet current COCOM requirements
- We need it now (1-3 year look)

Essential

- Vital for successful mission accomplishment
- We'd like it now, we need it soon (3-5 year look)

Desired

- Enhance mission success, long term capabilities
- We'd like it soon, we will eventually need it (5+ year look)

Each tab also includes an Executive Summary containing the required appropriation type and three-year cost projections for each program.

Information papers are grouped into eight functional categories including seven Service Core Functions and a Simulation and Distributed Mission Operations category. A header identifies each information paper as belonging to one of the eight categories listed below:

- ***Air Superiority / Global Precision Attack***
- ***Space Superiority / Cyberspace Superiority***
- ***Command and Control***
- ***Global Integrated ISR***
- ***Rapid Global Mobility***
- ***Special Operations / Personnel Recovery***
- ***Agile Combat Support***
- ***Simulation and Distributed Mission Operations***

Executive Summary pages identify the type of program funding required by appropriation:

- 3840 - ANG Operations and Maintenance, one year funding
- 3010 - Aircraft Procurement, three year funding
- 3600 - Research and Development, two year funding
- 3080 - Other Procurement, three year funding

The Weapons Systems Modernization Requirements Table summarizes and prioritizes each program in priority order and includes the type of funds required and program costs.

The State Matrix lists each major weapon system and the states in which it is located.



2012 Weapons Systems Modernization Requirements



AIR SUPERIORITY/GLOBAL PRECISION ATTACK	Type Funds	Units Required	Unit Cost	Program Cost
A-10 Day/Night Helmet Mounted Integrated Targeting (HMIT) System				
*A-10 HMIT kits	3010	54	\$131,000	\$7,074,000
Provides increased situational awareness and lethality while preventing fratricide.				
A-10 Electronic Warfare Suite				
*ALR-69 NRE	3400	1	\$22,840,000	\$22,840,000
*ALR-69 Upgrade kits	3010	108	\$81,400	\$8,791,200
*EA Pod NRE	3600	1	\$31,000,000	\$31,000,000
*EA Pod Upgrade kits	3010	30	\$1,320,000	\$39,600,000
Enhanced threat detection and azimuth accuracy				
A-10 Fully Integrated Communication Suite				
*Directional Audio NRE	3600	1	\$10,500,000	\$10,500,000
*Group A & B Directional kits	3010	108	\$42,100	\$4,546,800
*Group C Directional kits	3010	162	\$6,700	\$1,085,400
*Unit Test Equipment	3080	7	\$43,800	\$306,600
*Harris SA waveform NRE	3600	1	\$2,000,000	\$2,000,000
Integrates advanced communications suite with directional audio				
A-10 Anti-Jam Embedded GPS / INS (EGI)				
*Program NRE	3600	1	\$4,500,000	\$4,500,000
*Anti-jam EGI	3010	108	\$65,000	\$7,020,000
Provides ability to operate in a degraded, denied, or deceived environment.				
A-10 Integrated Advanced Targeting Pod/High Resolution Display				
*Program NRE	3600	1	\$9,000,000	\$9,000,000
*Color Displays	3010	108	\$160,000	\$17,280,000
ATP Upgrades	3010	37	\$1,500,000	\$55,500,000
Upgrades targeting pod and display.				
A-10 Engine Modernization and Enhancement				
*Phase 1 NRE	3600	1	\$1,500,000	\$1,500,000
*A-10 Phase 1 Engines	3010	216	\$240,000	\$51,840,000
*Phase 2 NRE	3600	1	\$64,000,000	\$64,000,000
*A-10 Phase 2 Engines	3010	216	\$66,000	\$14,256,000
A-10 engine replacement required to sustain the A-10 for the next 25 years.				
A-10 Subtotal				\$352,640,000
F-15 Active Electronically Scanned Array (AESA) Radar				
*AESA Radars	3010	14	\$6,000,000	\$84,000,000
*Next generation precision capability to detect, track, and eliminate asymmetric threats				
F-15 Infrared Search-and-Track (IRST)				
*Program NRE	3600	1	\$25,000,000	\$25,000,000
*IRST Kits	3010	50	\$3,500,000	\$175,000,000
Enables passive detection and tracking of asymmetric and radar jamming threats				
F-15 Improved Operational Flight Program (OFP) Development/Fielding Process				
*F-15 OFPs	3600	5	\$30,000,000	\$150,000,000
*OFP Development				
F-15 Modernized Self-Protection Suite				
*RWR NRE	3600	1	\$8,000,000	\$8,000,000
*RWR Upgrade kits	3010	103	\$710,000	\$73,130,000
*RF countermeasures NRE	3600	1	\$50,000,000	\$50,000,000
*RFCM Systems	3010	103	\$1,410,000	\$145,230,000
*BOL kits	3010	103	\$120,000	\$12,360,000
*ALQ-128 Upgrade NRE	3600	1	\$5,000,000	\$5,000,000
*ALQ-128 Upgraded Units	3010	103	\$440,000	\$45,320,000
Upgraded defensive suite				
F-15 Display Upgrades and Advanced Targeting Pod (ATP) Integration				
*Radar Displays	3010	130	\$82,500	\$10,725,000
*RWR Displays	3010	105	\$80,000	\$8,400,000
*ATP Group A kits	3010	105	\$40,000	\$4,200,000
Upgraded displays and improved acquisition and combat ID of asymmetric targets				
F-15 Subtotal				\$796,365,000
F-16 Integrated Sensor Enhancements - Active Electronically Scanned Array (AESA) Radar				
*Program NRE	3600	1	\$120,000,000	\$120,000,000
*Block 40/50 AESA Radars	3010	93	\$2,500,000	\$232,500,000
*APG-68+ NRE	3600	1	\$20,000,000	\$20,000,000
*Block 30 APG-68+ kits	3010	186	\$670,000	\$124,620,000
Next generation precision capability for detection and targeting of ground and air targets.				
F-16C BIK 30/32/40/42 Advanced Identification Friend/Foe (AIFF)				
*Block 42 Integration NRE	3600	1	\$2,300,000	\$2,300,000
*Block 42 APX-124-60 AIFF Kits	3010	45	\$305,624	\$13,753,080
*Block 30 APX-124-60 AIFF retrofit Kits	3010	79	\$107,595	\$8,500,005
Required IFF upgrades				
F-16 Integrated Sensor Enhancements - Infrared Search-and-Track (IRST) Pod				
*Program NRE	3600	1	\$25,000,000	\$25,000,000
*IRST Kits	3010	78	\$3,900,000	\$304,200,000
Enables passive detection and tracking of asymmetric and radar jamming threats				
F-16 Advanced Targeting Pod Upgrades				
*4th Gen pod upgrades	3010	33	\$1,500,000	\$49,500,000
*ATP-SE Pods	3010	20	\$1,700,000	\$34,000,000
Provides 4th generation targeting/identification/recognition capability				

AIR SUPERIORITY/GLOBAL PRECISION ATTACK				
	Type Funds	Units Required	Unit Cost	Program Cost
F-16 Integrated Electronic Warfare (EW) Suite				
*NRE (ALR-69)	3600	1	\$22,840,000	\$22,840,000
*F-16 Blk 30/42 ALR-69 Upgrade	3010	290	\$82,000	\$23,780,000
*NRE (ALR-56M)	3600	1	\$50,000,000	\$50,000,000
*F-16 BLK 40/50/52 ALR-56M upgrade	3010	70	\$340,000	\$23,800,000
*Upgraded Electronic Attack (EA) Pod Development	3600	1	\$31,000,000	\$31,000,000
*Upgraded Electronic Attack (EA) Pods	3010	60	\$1,320,000	\$79,200,000
*F-16 Blk 40/50/52 ALQ-213 Development	3600	1	\$28,000,000	\$28,000,000
*ALQ-213 kits	3010	141	\$160,000	\$22,560,000
*Missile Warning System (MWS) with 3D audio	3010	150	\$1,330,000	\$199,500,000
*MWS/3D ground support equipment (GSE)	3080	1	\$4,120,000	\$4,120,000
Provides all F-16 blocks with an upgraded EW suite				
F-16 Secure Line-of-Sight (SLOS) and Beyond LOS (BLOS) with 3-D Audio Communications				
*F-16 2nd ARC-210 radio kit	3010	259	\$150,000	\$38,850,000
*Directional audio NRE	3600	1	\$5,200,000	\$5,200,000
*Group A & B Directional kits	3010	259	\$45,000	\$11,655,000
*Group C Directional kits	3010	311	\$6,700	\$2,083,700
*Unit Test Equipment	3080	10	\$43,800	\$438,000
Enhances time sensitive targeting and coordination with ground forces				
F-16 Day/Night Compatible Helmet Mounted Integrated Targeting (HMIT)				
*F-16 HMIT kits	3010	166	\$122,451	\$20,326,866
*F-16 JHMCS Night kits	3010	129	\$240,000	\$30,960,000
Provides increased situational awareness and lethality while preventing fratricide.				
F-16 Additional High Resolution Display				
*Color Display units	3010	259	\$183,764	\$47,594,876
*IBS Receiver kits	3010	259	\$176,061	\$45,599,799
Replaces center pedestal with a smart color display.				
F-16 Subtotal				\$1,621,881,326
AIR SUPERIORITY/GLOBAL PRECISION ATTACK TOTAL				\$2,770,886,326
COMMAND AND CONTROL				
	Type Funds	Units Required	Unit Cost	Program Cost
Air Control Squadron Theater Deployable Communications (TDC)				
*Unit Requirements	3080	12	\$500,000	\$6,000,000
CRCs in support of TACS				
Air Control Squadron Power Distribution Panel System (PDPS)				
*Systems	3840	24	\$300,000	\$7,200,000
PDPS in support of TACS				
Air Control Squadron Tactical Quiet Generators (TQG)				
*Systems	3080	80	\$82,000	\$6,560,000
Provides quiet high power generators for C2 functions				
Air Operations Center (AOC) Targeting Applications				
*TAWS	3080	16	\$8,000	\$128,000
*GPL/IPL Storage	3080	14	\$28,000	\$392,000
Targeting application workstation systems				
Air Defense Sector (ADS) Tactical Satellite Communication (TACSAT)				
*TACSAT Communication Systems	3080	60	\$20,000	\$1,200,000
BLOS tactical satellite communications				
Air Operations Center Joint Range Extension (JRE)				
*JRE	3080	5	\$195,000	\$975,000
JRE equipment for the AOC interface control cell				
C-2 Subtotal				\$22,455,000
TACP Dismounted Interoperable Sensor Acquisition Suite				
*DISAS	3010	336	\$10,000	\$3,360,000
Lightweight digital interactive mapping device for air and ground forces SA				
TACP Handheld Day/Night Laser Coded Spot Tracker				
*SWIR Systems	3840	169	\$50,000	\$8,450,000
Lightweight JTAC laser				
TACP Lightweight Handheld Laser Target Range Finder				
*Laser Range Finders	3840	280	\$18,000	\$5,040,000
JTAC laser range finder				
Tactical Air Control Party (TACP) Rapidly Deployable Joint Operational Communications Suite				
*Radio communications suite	3840	85	\$140,000	\$11,900,000
TACP communications suite				
TACP Next Generations Hand-held Joint Terminal Attack Controllers (JTAC) Radio				
*Radios	3840	336	\$40,000	\$13,440,000
JTACs radios				
TACP Subtotal				\$42,190,000
COMMAND AND CONTROL TOTAL				\$64,645,000
GLOBAL INTEGRATED ISR				
	Type Funds	Units Required	Unit Cost	Program Cost
E-8C Organic Combat Identification Capability For Targeting				
*Aided Target Recognition (ATR) Software Development	3600	1	\$41,198,000	\$41,198,000
*Net-Centric Collaborative Targeting (NCCT) NRE	3600	1	\$31,914,000	\$31,914,000
*NCCT Kits	3010	18	\$384,000	\$6,912,000
*MS-177 EO/IR Sensor NRE	3600	1	\$120,000,000	\$120,000,000
*EO/IR Sensors	3010	6	\$65,000,000	\$390,000,000
Organic combat identification capability for targeting				

GLOBAL INTEGRATED ISR		Type	Units	Unit	Program
		Funds	Required	Cost	Cost
E-8C Interoperability with Commercial Software Programs					
	*Commercial Software Licenses	3080	18	\$27,800	\$500,400
	*Electronic Flight Bags	3010	50	\$15,000	\$750,000
	*Group A Mods	3010	18	\$289,000	\$5,202,000
	Upgrades JSTARS operators workstations				
E-8C Mission Radio Calibration Tool					
	*Test Sets	3010	6	\$75,000	\$450,000
	*TOs, training materials	3010	1	\$500,000	\$500,000
	Upgrades JSTARS operators workstations				
E-8C Integrated Broadcast Service					
	*AFTRS-R NRE	3600	1	\$45,150,000	\$45,150,000
	*AFTRS-R NRE	3010	1	\$22,350,000	\$22,350,000
	Primary threat warning system to Joint STARS and also provides intelligence reports (NRE)				
E-8C Multi-Agency Communication Capability (MACC)					
	*PRC-117G & CF-19 Toughbook	3010	22	\$ 68,000	\$1,496,000
	*Group A kits	3010	22	\$ 134,390	\$2,956,580
	*NRE	3010	1	\$ 11,000,000	\$11,000,000
	*Training	3010	1	\$ 800,000	\$800,000
	*Installation	3010	18	\$ 400,000	\$7,200,000
	Provides enhanced access to C2ISR resources				
RC-26B Mission Management System					
	*Program NRE	3600	1	\$1,500,000	\$1,500,000
	*Shipset kits	3010	11	\$700,000	\$7,700,000
	Integrates RC-26B mission equipment				
RC-26B Avionics Modernization					
	*Program NRE	3600	1	\$4,500,000	\$4,500,000
	*Shipset kits	3010	11	\$1,980,000	\$21,780,000
	Replaces outdated RC-26B flight avionics				
RC-26B Communications Suite					
	*Program NRE	3600	1	\$1,200,000	\$1,200,000
	*Shipset kits	3010	11	\$720,000	\$7,920,000
	Upgrades both RC-26B Blocks with a fully operational communications suite				
RC-26B Dual Sensor Capability					
	*Program NRE	3600	1	\$1,750,000	\$1,750,000
	*Shipset kits	3010	5	\$1,550,000	\$7,750,000
	Adds a second sensor to the RC-26B aircraft				
RC-26B Late Generation Supportable Self Protection System (SPS)					
	*Program NRE	3600	1	\$600,000	\$600,000
	*Shipset kits	3010	5	\$620,000	\$3,100,000
	Installs RC-26B Block 20 aircraft with a missile warning system				
C-26B Subtotal					\$746,178,980
Senior Scout Receiver Modernization					
	*Program NRE	3600	1	\$2,610,000	\$2,610,000
	*Group B Ship sets, install and flight test	3010	4	\$430,000	\$1,720,000
	Upgrades mission equipment				
Senior Scout Multi-Beam Phased Array Antenna (Beamformer)					
	*Program NRE	3600	1	\$1,260,000	\$1,260,000
	*Group B Ship sets, install and flight test	3010	4	\$980,000	\$3,920,000
	Adds direction COMINT antenna capability				
Senior Scout Radio RIP and Identification of pre-Detection Recordings (RIPR)					
	*Program NRE	3600	1	\$3,260,000	\$3,260,000
	*Group B Ship sets, install and flight test	3010	4	\$140,000	\$560,000
	Wide band recording capability				
Senior Scout High Frequency Communication Geolocation					
	*Program NRE	3600	1	\$1,380,000	\$1,380,000
	*Group B Ship sets, install and flight test	3010	4	\$740,000	\$2,960,000
	Adds HF communication signal geolocation capability				
Senior Scout Skyhawk Copy					
	*Program NRE	3600	1	\$3,200,000	\$3,200,000
	*Group B Ship sets, install and flight test	3010	4	\$300,000	\$1,200,000
	Adds full comint exploitation capability				
Senior Scout Subtotal					\$22,070,000
DCGS Integrated Suite of AFSOC Support Equipment & Software Loads					
	*DCGS-A Suites	3080	7	\$450,000	\$3,150,000
	Updates DCGS with FMV analysis				
DCGS Ability to Rapidly Generate CAT-I Coordinates					
	*CAT I Equipment	3600	1	\$900,000	\$900,000
	Updates DCGS coordinate generating capability				
DCGS Subtotal					\$4,050,000
MQ-1/MQ-9 Multi-level Secure Communications Suite					
	*NRE 2nd Radio	3600	1	\$3,600,000	\$3,600,000
	*NRE GCS Intercom	3600	1	\$2,100,000	\$2,100,000
	*2nd Radio mod Kits	3010	120	\$300,000	\$36,000,000
	*GCS Intercom Mod Kits	3010	23	\$600,000	\$13,800,000
MQ-1/MQ-9 Collaborative Mission Execution Framework					
	*RPA Fusion Engine Integration	3080	1	\$3,600,000	\$3,600,000
	*Fusion Engine Installations	3010	6	\$1,400,000	\$8,400,000
	Provides an RPA Squadron Operations Center				

GLOBAL INTEGRATED ISR		Type	Units	Unit	Program
		Funds	Required	Cost	Cost
MQ-1/MQ-9 Independent and Redundant Data Architectures					
*Dual diverse infrastructure	3010	3		\$2,100,000	\$6,300,000
*DISA Service Delivery Point (SDP)	3010	6		\$700,000	\$4,200,000
*RPA DMZ	3010	6		\$800,000	\$4,800,000
Provides an independent RPA network					
MQ-1/MQ-9 Squadron Operations Center Baseline					
*RSOC Configuration Baseline	3010	1		\$2,500,000	\$2,500,000
*RPA SOC Modernization	3010	6		\$600,000	\$3,600,000
*RPA SOC Upgrade Kits	3010	6		\$1,400,000	\$8,400,000
*RSOC FTU Modernization Kits	3010	2		\$2,300,000	\$4,600,000
Provides an RPA Squadron Operations Center					
MQ-1/MQ-9 Rapidly Deployable RPA Capability					
*Launch and Recovery GCS	3010	5		\$4,300,000	\$21,500,000
*Ground Data Terminals	3010	5		\$1,400,000	\$7,000,000
*MQ-1 Aircraft sensors	3010	20		\$3,200,000	\$64,000,000
Provides RPA GCS capability					
RPA Subtotal					\$194,400,000
GLOBAL INTEGRATED ISR TOTAL					\$966,698,980
RAPID GLOBAL MOBILITY		Type	Units	Unit	Program
		Funds	Required	Cost	Cost
C-5 Structural Modernization					
Aft Crown Skin	3010	21		\$9,400,000	\$197,400,000
Replaces the aft crown skin					
C-5 and C-17 Real Time in the Cockpit and Data Link (DL)					
*C-5 NRE	3600	1		\$4,000,000	\$4,000,000
*C-17 NRE	3600	1		\$4,000,000	\$4,000,000
*C-5 Group A	3010	21		\$100,000	\$2,100,000
*C-5 TDL Radios	3010	21		\$330,000	\$6,930,000
*C-5 TDL Processors	3010	21		\$100,000	\$2,100,000
*C-17 Group A	3010	17		\$100,000	\$1,700,000
*C-17 TDL Radios	3010	17		\$330,000	\$5,610,000
*C-17 TDL Processors	3010	17		\$100,000	\$1,700,000
Provides LOS/BLOS data link					
C-5 and C-17 Large Aircraft Infrared Countermeasures (IRCM) and Next Generation Threat Detection System					
*C-5 LAIRCM NRE	3600	1		\$10,000,000	\$10,000,000
*C-5 and C-17 Next Gen NRE	3600	1		\$12,000,000	\$12,000,000
*C-5 LAIRCM Group A	3010	21		\$4,500,000	\$94,500,000
*C-5 LAIRCM Group B	3010	21		\$3,000,000	\$63,000,000
*C-17 LAIRCM Group A	3010	8		\$2,100,000	\$16,800,000
*C-17 LAIRCM Group B	3010	8		\$3,000,000	\$24,000,000
*C-5 Next Generation Sensors	3010	21		\$2,904,855	\$61,001,955
*C-17 Next Generation Sensors	3010	17		\$2,954,855	\$50,232,535
Allows C-5 and C-17 aircraft to fly in an increasing threat environment					
C-17 Class III Electronic Flight Bag (EFB)					
*NRE	3600	1		\$2,400,000	\$2,400,000
*C-17 Electronic Flight Bag	3010	17		\$240,000	\$4,080,000
Provides aircrew with digital flight publications and performance data.					
C-5 Brake Temperature Monitoring System (BTMS)					
*NRE	3600	1		\$3,000,000	\$3,000,000
*Upgraded Brake System	3010	21		\$2,000,000	\$42,000,000
*Brake Temperature Monitoring System	3010	21		\$2,000,000	\$42,000,000
Provides critical real-time brake temperature data.					
C-17 Radar Warning Receiver (RWR)					
*NRE	3600	1		\$10,000,000	\$10,000,000
*ALR-69A	3010	17		\$1,220,000	\$20,740,000
Provides improved threat location.					
Strategic Airlift Subtotal					\$681,294,490
C-130H Real-Time Information in the Cockpit					
*RTIC Systems	3010	118		\$500,000	\$59,000,000
Low cost data link designed give real time threat and friendly information.					
C-130H/J Advanced Large Infrared Missile Approach Warning System Upgrade and Hostile Fire Indicator					
*C-130J Group A kits	3010	18		\$970,000	\$17,460,000
*C-130J Group B kits	3010	10		\$4,400,000	\$44,000,000
*Next Generation Group A Kits	3010	153		\$420,000	\$64,260,000
*Next Generation Group B Kits	3010	78		\$774,855	\$60,438,690
Provides crews with an upgraded MWS					
C/LC-130H/J Loadmaster Crashworthy Seat					
*Loadmaster Seat Kits	3010	152		\$90,000	\$13,680,000
Provides the C-130 Loadmaster with a seat able to withstand excessive impact.					
C-130H Night Vision Imaging System Improvement					
*NRE	3010	1		\$1,000,000	\$1,000,000
*C-130H NVIS Filter Kit	3010	135		\$50,000	\$6,750,000
Upgrades NVIS for C-130H					
C-130H/J Advanced Radar Warning Receiver (RWR)					
*ALR-69A for C-130s without RWRs	3010	72		\$1,220,000	\$87,840,000
*NRE ALR-69A	3600	1		\$10,000,000	\$10,000,000
*ALR-69 upgrade for C-130s with existing RWRs	3010	69		\$140,000	\$9,660,000
*NRE (ALR-69)	3600	1		\$31,590,000	\$31,590,000
*ALR-56M upgrade for C-130J with existing RWRs	3010	31		\$380,000	\$11,780,000
*NRE(ALR-56M)	3600	1		\$50,000,000	\$50,000,000
Installs/upgrades C-130 RWRs with digital receivers					

RAPID GLOBAL MOBILITY		Type	Units	Unit	Program
		Funds	Required	Cost	Cost
C-130H Terrain Awareness Warning System					
	*NRE	3600	1	\$2,000,000	\$2,000,000
	*VerSA Solution	3010	1	\$16,400,000	\$16,400,000
	Provides more robust "look ahead" terrain awareness				
C-130J High Pressure Portable Oxygen Bottle					
	*High Pressure Oxygen Kits	3010	20	\$6,000	\$120,000
	Provides portable high pressure oxygen				
C-130J Cargo Compartment Camera					
	*NRE	3600	1	\$2,000,000	\$2,000,000
	*Kits	3010	18	\$350,000	\$6,300,000
	Provides aircrew monitoring capability for the cargo compartment				
C-130J Increased Firefighter Safety					
	*NRE	3010	1	\$150,000	\$150,000
	*OFP Upgrade	3010	1	\$300,000	\$300,000
	Provides aircrew increased safety during aerial firefighting				
C-130H/J Subtotal					\$494,728,690
C-27J Loadmaster Armor/ C-130 H/J Aircraft Armor					
	*NRE	3600	1	\$2,000,000	\$2,000,000
	*C-27J Kits	3010	36	\$40,000	\$1,440,000
	*C-130H/J A Kits	3010	139	\$40,000	\$5,560,000
	*C-130H/J B Kits	3010	70	\$200,000	\$14,000,000
	Enhances aircraft armor				
C-27J Enhanced Situational Awareness Displays					
	*NRE	3010	1	\$1,000,000	\$1,000,000
	*Digital Map system	3010	42	\$70,000	\$2,940,000
	Provides a digital map system as originally specified				
C-27J Operational Flight Program (OFP) Software Upgrades					
	*OFP Software Upgrade	3010	1	\$1,000,000	\$1,000,000
	Upgrades digital data				
C-27J Certified Heads Up Display (HUD) Primary Flight Display (PFD)					
	*NRE	3010	1	\$1,000,000	\$1,000,000
	*HUD/PFD	3010	42	\$48,000	\$2,016,000
	Modifies the HUD to make it compatible with all pilots				
C-27J Subtotal					\$30,956,000
LC-130 Eight Bladed Propeller Replacement					
	*NRE	3600	1	\$5,000,000	\$5,000,000
	*NP2000 System for LC-130	3010	9	\$2,000,000	\$18,000,000
	Replaces existing propulsion (propellers, engine sys) with high efficiency, low MX items				
LC-130 Special Airborne Mission Installation and Response and Crevasse Detection Radar					
	*CDR, Operational Improvements	3010	1	\$500,000	\$500,000
	*SABIR permanent modification	3010	1	\$1,000,000	\$1,000,000
	Provides crevasse detection for take-off/landings on snow and ice				
LC-130H Electronic Propeller Control System					
	*LC-130 EPCS	3010	4	\$765,000	\$3,060,000
	*EPCS TO	3010	1	\$1,000,000	\$1,000,000
	Replaces synchrophasers and propeller control systems with reliable digital controls.				
LC-130H In-flight Propeller Balancing (IFPB)					
	*LC-130 IFPB	3010	10	\$350,000	\$3,500,000
	*IFPB TO	3010	1	\$1,000,000	\$1,000,000
	Replaces synchrophasers and propeller control systems with reliable digital controls.				
LC-130H Jet Assisted Take Off (JATO)					
	*Complete qualification program	3600	1	\$400,000	\$400,000
	*Replacement JATO motors	3010	1095	\$21,000	\$22,995,000
	Provides JATO motors for unimproved runways				
LC-130 Subtotal					\$56,455,000
KC-135 Advanced Infrared Countermeasures (IRCM) Defensive Systems					
	*NRE	3600	1	\$6,000,000	\$6,000,000
	*Group A	3010	180	\$600,000	\$108,000,000
	*Group B	3010	90	\$1,800,000	\$162,000,000
	Allows KC-135 aircraft to fly in an environment of increasing threat complexity and lethality.				
KC-135 Tactical Data Link (TDL) and Situational Awareness Cockpit Display Units					
	*NRE	3600	1	\$4,000,000	\$4,000,000
	*Group A	3010	180	\$120,000	\$21,600,000
	*TDL Radios and Processors	3010	190	\$380,000	\$72,200,000
	Low cost data link designed give real time threat and friendly information.				
KC-135 Fuel Tank Fire Explosion Protection					
	*NRE	3600	1	\$2,000,000	\$2,000,000
	*Fuel Tank Conversions	3010	180	\$200,000	\$36,000,000
	Modifies KC-135 fuel tanks for explosion protection				
KC-135 External Overt/Covert Lighting					
	*NRE	3600	1	\$1,000,000	\$1,000,000
	*Kits	3010	190	\$70,000	\$13,300,000
	Will increase safety by meeting FAA and MILSPEC standards and allowing covert options in theater.				
KC-135 Subtotal					\$426,100,000
C-38 Replacement Aircraft					
	*Supports Congressional, DOD, Air Force and National Guard Travel missions worldwide.	3010	4	\$66,752,500	\$267,010,000
C-40C Procurement					
	*Supports Congressional, DOD, Air Force and National Guard Travel missions worldwide.	3010	1	\$103,000,000	\$103,000,000

RAPID GLOBAL MOBILITY		Type	Units	Unit	Program
		Funds	Required	Cost	Cost
C-40C High Speed Data (HSD)					
	*Supplemental Type Certificate	3010	1	\$2,500,000	\$2,500,000
	*High Speed Data System	3010	3	\$2,000,000	\$6,000,000
	Provides DV critical communication infrastructure				
C-40C Electronic Flight Bag (EFB)					
	*Supplemental Type Certificate	3010	1	\$320,000	\$320,000
	*Electronic Flight Bags	3010	3	\$125,000	\$375,000
	Provides EFB for C-40B				
OSA Subtotal					\$379,205,000
RAPID GLOBAL MOBILITY TOTAL					\$2,068,739,180
SPECIAL OPERATIONS/PERSONNEL RECOVERY		Type	Units	Unit	Program
		Funds	Required	Cost	Cost
A-10 Lightweight Airborne Radio System (LARS) Upgrade					
	*LARS units	3010	108	\$123,000	\$13,284,000
	Provides compatibility with ground based CSAR survival radios				
Personnel Recovery A-10s Subtotal					\$13,284,000
EC-130J Large Aircraft Infrared Countermeasures (LAIRCM) Self Protection Suite					
	*LAIRCM group A kits	3010	4	\$1,212,500	\$4,850,000
	*LAIRCM group B kits with NexGen sensors included	3010	4	\$3,125,000	\$12,500,000
	Provides defense for the EC-130J				
EC-130J Special Airborne Mission Installation and Response Arm/Pods					
	*Kits	3010	7	\$1,245,714	\$8,719,998
	*Crashworthy seat kit	3010	1	\$60,000	\$60,000
	Low cost sensor arm				
EC-130J Integrated Satellite Communication Radios					
	*NRE	3600	1	\$2,000,000	\$2,000,000
	*ARC-210 SATCOM radios	3010	4	\$62,500	\$250,000
EC-130J Increased Aircraft Fuel Capacity					
	*External Tanks	3010	8	\$365,625	\$2,925,000
	Provides external fuel tanks for the EC-130J				
EC-130J Enhanced Situational Awareness System					
	*NRE	3600	1	\$1,000,000	\$1,000,000
	*SAMS/ESA Systems	3010	8	\$562,500	\$4,500,000
	ASOC SA system				
HC/MC-130P/N Integrated BLOS/SLOS Data Link					
	*NRE HC/MC aircraft	3600	1	\$3,250,000	\$3,250,000
	*Kits for H/MC-130	3010	13	\$1,184,615	\$15,399,995
	*LARS V12	3010	13	\$323,077	\$4,200,001
	*DMIS	3010	13	\$21,538	\$279,994
	Low cost data link designed to give real time threat and friendly information.				
HC/MC-130P/N EO/IR Sensor Upgrade with VDL					
	*Program NRE	3600	1	\$2,000,000	\$2,000,000
	*EO/IR Sensor Kits	3010	13	\$1,076,923	\$13,999,999
	Integrate onboard sensors with aircraft systems and provide data link capability				
HC/MC-130P/N Integrated Electronic Countermeasure Suite with Hostile Fire Indicator and Virtual Electronic Combat Training System (VECTS)					
	*ALQ-213 System NRE	3600	1	\$2,000,000	\$2,000,000
	*Directional Audio (NRE)	3600	1	\$6,000,000	\$6,000,000
	*ALQ-213 w 3D Audio Kits	3010	13	\$226,154	\$2,940,002
	*Group C kits	3010	117	\$6,947	\$812,799
	*Unit Test Equipment	3080	3	\$58,400	\$175,200
	*HMCS NRE	3600	1	\$5,100,000	\$5,100,000
	*HMCS Group A	3010	13	\$323,077	\$4,200,001
	*HMCS Group C	3010	39	\$154,359	\$6,020,001
	*Hostile Fire Indicator	3010	13	\$269,230	\$3,499,990
	HFI detects small arms and RPGs.				
HC/MC-130P/N Combat Survivable Cargo compartment					
	*Dual Rail Fuel Tanks	3010	9	\$1,888,889	\$17,000,001
	*Wireless Communication Systems	3010	13	\$11,214	\$145,782
	*Aircrew flight equipment storage rack	3010	13	\$5,384	\$69,992
	*Crashworthy loadmaster seats	3010	26	\$94,807	\$2,464,982
	Provides more survivable cargo compartment equipment				
HC/MC-130P/N Enhanced Engine and Propeller Performance					
	*NRE	3600	1	\$5,000,000	\$5,000,000
	*60/90 kVA and Oil Cooler Augmentation	3010	3	\$666,666	\$1,999,998
	*Synchronphaser	3010	13	\$53,846	\$699,998
	*ECPS	3010	13	\$823,846	\$10,709,998
	*ECPS TOs	3010	1	\$1,000,000	\$1,000,000
	*IPBS	3010	13	\$376,923	\$4,899,999
	*NP2000	3010	13	\$2,153,846	\$27,999,998
	*Etold	3010	13	\$4,239	\$55,107
	Integrates the NP2000 8 bladed prop				
Special Operations C-130s Subtotal					\$178,728,835
C-32 Upgraded Satellite Communication System with Secure KU Bandwidth					
	*Annual KU Bandwidth contracts	3840	5	\$ 14,000,000	\$70,000,000
	*Satellite Communication Systems	3010	2	\$ 1,400,000	\$2,800,000
	Provides KU satellite capability				

SPECIAL OPERATIONS/PERSONNEL RECOVERY		Type	Units	Unit	Program
		Funds	Required	Cost	Cost
C-32 Communication Management System (CMS) Replacement					
*CMS Replacements	3010	2	\$	2,000,000	\$4,000,000
replaces CMS due to obsolescence					
Special Operations Aircraft Subtotal					\$76,800,000
HH-60 Improved Communications Suite with Three-Dimensional Audio					
Radio NRE	3600	1		\$4,300,000	\$4,300,000
*Secure Radios	3010	72		\$55,556	\$4,000,032
*ANW2 Radios	3010	20		\$38,500	\$770,000
*Civil Band Radios	3010	6		\$89,500	\$537,000
Provides secure com for HD and fills a radio shortfall for combat missions.					
HH-60G Integrated Flight Deck SMFCD/SADL/LARS V12					
*NRE	3600	1		\$1,000,000	\$1,000,000
*EPLRS Receivers/Transmitters	3010	17		\$36,822	\$625,974
*SMFCDs	3010	17		\$222,529	\$3,782,993
*LARS V12	3010	17		\$78,235	\$1,329,995
Cockpit upgrades and data link for HH-60G					
HH-60G Hostile Fire Indicator With Enhanced Defensive Systems Suite					
*Defensive NRE	3600	1		\$2,000,000	\$2,000,000
*Directional Audio (NRE)	3600	1		\$19,200,000	\$19,200,000
*Hostile Fire Indicator	3010	17		\$279,411	\$4,749,987
*Group C kits	3010	108		\$7,081	\$764,748
*Unit Test Equipment	3080	3		\$58,400	\$175,200
*ALQ-213 w 3D Audio kits	3010	18		\$233,333	\$4,199,994
HFI detects small arms and RPGs.					
HH-60 Improved/Advanced Weapon Systems					
*Dillon M134D mini guns	3010	36		\$66,667	\$2,400,012
*FNH GAU-21 .50 Cal Machine guns	3010	36		\$155,555	\$5,599,980
Provides .50 caliber machine gun capability.					
HH-60G Helmet Mounted Cueing/Point Designation					
*NRE	3600	1		\$6,000,000	\$6,000,000
*HMCS Aircraft kits	3010	17		\$335,294	\$5,699,998
*HMCS Helmet kits	3010	102		\$87,843	\$8,959,986
*Night Vision Units	3010	102		\$65,882	\$6,719,964
*Coordinate Generating Lasers	3010	17		\$558,824	\$9,500,008
Provides enhanced crew awareness.					
HH-60G Subtotal					\$92,315,871
GA Upgrade Combat Survivability Suite					
*M4 modernization	3080	90		\$1,600	\$144,000
*M9 modernization	3080	90		\$1,700	\$153,000
*Portable Situational Awareness Data Link	3080	30		\$40,000	\$1,200,000
*Handheld Day/night Laser Marker	3080	60		\$80,000	\$4,800,000
*Fusion Goggles	3080	60		\$40,000	\$2,400,000
*Non-Lethal Weapons	3080	60		\$6,000	\$360,000
Provides critical uniform, communication and weapons improvements and upgrades.					
GA Pararescue Recovery Vehicles					
*Water Operations Support Boat	3080	3		\$350,000	\$1,050,000
*Advanced Water Rescue Craft	3080	16		\$100,000	\$1,600,000
*Search and Rescue Tactical Vehicle	3080	6		\$150,000	\$900,000
Provides special equipment for recover operations.					
GA Modernized Personnel Locator Tools					
*Underwater Search Robot	3080	6		\$300,000	\$1,800,000
*Full Scan SONAR	3080	6		\$200,000	\$1,200,000
*USAR	3080	6		\$100,000	\$600,000
Provides special underwater equipment for recover operations.					
Guardian Angel Subtotal					\$16,207,000
ST Dismounted Operators Suite					
*Personal Protection Equipment	3080	107		\$3,700	\$395,900
*Integrated Tactical Interface	3080	30		\$28,000	\$840,000
*Video Data Link	3080	20		\$20,000	\$400,000
*Hot Weather Headset	3080	100		\$300	\$30,000
*SWIR systems	3080	20		\$50,000	\$1,000,000
Provides lightweight gear for rapid return of fire and precision airstrikes.					
ST Heavy Weapons Improvement					
*Engagement Accessories	3080	10		\$65,000	\$650,000
*SSR Optics	3080	12		\$3,500	\$42,000
Provides improved situational awareness and communication capabilities during combat operations.					
ST Employment Enhancement Suite					
*HAHO Navigation	3080	40		\$2,000	\$80,000
*Jumpable PPE	3080	100		\$2,000	\$200,000
*LT ATV	3080	10		\$20,000	\$200,000
*Swiftwater Craft	3080	2		\$20,000	\$40,000
*Motorcycles	3080	8		\$9,000	\$72,000
*Snow Machine	3080	4		\$11,000	\$44,000
*Zodiacs	3080	10		\$15,000	\$150,000
*Water Operations Support Boat	3080	1		\$350,000	\$350,000
Special vehicles for the STS					
ST Universal Data Link					
*Universal Data Link	3080	20		\$40,000	\$800,000
Provides improved situational awareness and communication capabilities during combat operations.					
Special Tactics Subtotal					\$5,293,900
SPECIAL OPERATIONS/PERSONNEL RECOVERY TOTAL					\$382,629,606

AGILE COMBAT SUPPORT				
	Type	Units	Unit	Program
	Funds	Required	Cost	Cost
Security Forces Small Arms Training Simulated Munitions				
*M-4 Simulated Munitions Kit	3080	3600	\$200	\$720,000
*M-9 Simulated Munitions Kit	3080	3600	\$200	\$720,000
*Simulated Munitions PPE	3080	3600	\$100	\$360,000
Provides SF the ability to train without limited small arms ranges.				
Security Forces Handheld Explosive Detection Electronic Kit				
*Handheld Explosive Detection Kit	3080	279	\$40,000	\$11,160,000
Explosives detection equipment for SF				
Security Forces Less-than-lethal Equipment				
*Less than lethal Kits	3080	186	\$50,000	\$9,300,000
Provides SF crowd control and civil disturbance equipment.				
Security Forces Mobility Bag Upgrades				
*Mobility Bag kit	3080	2910	\$1,800	\$5,238,000
*Fire resistant undergarments/PPE	3080	2910	\$3,000	\$8,730,000
*Small arms weapon cases	3080	2910	\$412	\$1,198,920
*SF Specific Duty Misc. Items	3080	2910	\$1,000	\$2,910,000
Provides SF equipment required for deployment and combat operations.				
Security Forces Small Arms Range Solution				
*Modular Small Arms Range	3080	70	\$4,100,000	\$287,000,000
Small arms ranges				
Security Forces Subtotal				\$327,336,920
C-130 Isochronal Inspection Stands				
*ISO Inspection stands	3080	15	\$500,000	\$7,500,000
Increases C-130 maintenance personal safety				
Satcom Radio Support Capability				
*Testers (2 per unit)	3080	182	\$25,000	\$4,550,000
Improves trouble shooting efficiency				
Multiple MDS Leak Detection Capability				
Hydrogen leak detectors	3080	153	\$29,200	\$4,467,600
Decreases the time to detect leaks in all MDS				
Obsolete Support Equipment				
*Fuel Qty Testers (2 per unit)	3080	11	\$278,000	\$3,058,000
*C-130 Engine R/I	3080	18	\$180,000	\$3,240,000
*50/60 Testers (4 per unit)	3080	122	\$25,000	\$3,050,000
replaces DMS flight operations support equipment				
Advanced Support Equipment				
*Alternative Tow Vehicles	3080	27	\$160,000	\$4,320,000
*Digital X-Ray Sets	3080	183	\$80,000	\$14,640,000
*VX-IAIS Upgrade kits	3080	19	\$1,503,699	\$28,570,281
Advanced flight operations support equipment				
Logistics Subtotal				\$73,395,881
AGILE COMBAT SUPPORT TOTAL				\$400,732,801
SPACE SUPERIORITY/CYBERSPACE SUPERIORITY				
	Type	Units	Unit	Program
	Funds	Required	Cost	Cost
Space Eagle Vision Next Generation				
*Eagle Vision next Generation	3080	1	\$16,900,000	\$16,900,000
Deployable commercial imagery direct downlink ground station				
Space Domain Infrastructure Capability Enhancement (DICE)				
*DICE Units	3080	17	\$119,294	\$2,027,998
Provides common switches				
Cyber and Critical Infrastructure Range (CCIR)				
*CCIR Weapons Systems	3080	2	\$510,000	\$1,020,000
*CCIR Refresh/Sustainment	3840	5	\$78,000	\$390,000
*JIOR/DREN Node hardware	3080	7	\$361,000	\$2,527,000
Emulates friendly and adversarial networks in cyberspace				
Cyber Adversary Replication Kit (ARK)				
*Suites	3080	6	\$304,000	\$1,824,000
CCIR Refresh/Sustainment				
Cyber Remote Access Toolset (RAT)				
*Suites	3080	2	\$335,000	\$670,000
Tool that access network vulnerability				
Cyber Immersive Telepresence for Distributed Operations (ITDO)				
*ITDO	3080	8	\$320,000	\$2,560,000
Provides a common operating picture				
Cyber Virtualized Cyber Environment (VCE)				
*Suites	3080	4	\$436,000	\$1,744,000
Equipment that replicates adversary networks				
SPACE SUPERIORITY/CYBERSPACE SUPERIORITY TOTAL				\$29,662,998
SIMULATION/DMO/RANGE				
	Type	Units	Unit	Program
	Funds	Required	Cost	Cost
Joint Terminal Attack Controllers (JTAC) Simulation and DMO Training and Rehearsal System				
*Simulation & Rehearsal system	3080	18	\$400,000	\$7,200,000
Provides high fidelity DMO JTAC simulation				
Guardian Angel Scenario Training Suite				
*Scenario Training Suite	3080	1	\$1,200,000	\$1,200,000
Provides high fidelity DMO GA simulation				

SIMULATION/DMO/RANGE		Type	Units	Unit	Program
		Funds	Required	Cost	Cost
Special Tactics Training Enhancement Suite					
	*AIE Tower	3080	1	\$1,200,000	\$1,200,000
	*Small arms trainers	3080	2	\$500,000	\$1,000,000
	*JTAC Simulators	3080	2	\$400,000	\$800,000
	Provides high fidelity DMO ST simulation				
Battle Control Center (BCC) DMO					
	*NRE	3080	1	\$4,000,000	\$4,000,000
	*DMO Suites	3080	4	\$2,000,000	\$8,000,000
	Provides high fidelity DMO BCC simulation				
Air Operations Center (AOC) Communications Training Lab					
	*DMO Suites	3840	8	\$65,500	\$524,000
	Provides high fidelity DMO AOC simulation				
C-130/JC-135 Advanced Squadron Level Simulator (ASLS) System					
	*Program NRE	3600	1	\$6,500,000	\$6,500,000
	*JC135 ASLS	3010	10	\$4,200,000	\$42,000,000
	*C-130	3010	7	\$5,100,000	\$35,700,000
	Provides high fidelity training ensuring increased readiness				
KC-135R Boom Operator Simulation System (BOSS)					
	*Program NRE	3010	1	\$4,300,000	\$4,300,000
	*BOSS	3010	16	\$1,600,000	\$25,600,000
	Provides high fidelity training ensuring increased readiness				
Simulator Subtotal					\$138,024,000
"Rangeless" Air Combat maneuvering Instrumentation					
	*P-5 Pods	3010	211	\$130,000	\$27,430,000
	Provides portable ACMI training				
Range Mobile High Fidelity Threat Simulators					
	*Mobile C2Us	3080	2	\$2,300,000	\$4,600,000
	*EW Emitters	3080	4	\$8,000,000	\$32,000,000
	*Surrogate RDR	3400	9	\$130,000	\$1,170,000
	*Surrogate TEL	3400	23	\$60,000	\$1,380,000
	Increases IADS simulation density				
Range High Fidelity Surrogate Targets					
	*High fidelity Targets	3400	90	\$70,000	\$6,300,000
	Supports RAP training				
Range Moving Targets					
	*GPS Flight Systems Targets	3400	56	\$1,000	\$56,000
	*Remote Control Target Unit	3400	28	\$35,000	\$980,000
	*Vehicle and Prep	3400	28	\$20,000	\$560,000
	Supports moving strafe target training				
Range Communications and Tactical Data Link (CTDL) Architecture Support					
	*LVT-2 Link 16 Radios	3080	12	\$320,000	\$3,840,000
	*Joint Range Extension systems	3400	13	\$329,000	\$4,277,000
	*WISS/JAWSS Upgrades	3080	14	\$200,000	\$2,800,000
	*Range Radios	3080	56	\$30,000	\$1,680,000
	*GPS Flight Systems	3400	14	\$50,000	\$700,000
	Range Support				
Airspace Ranges Subtotal					\$87,773,000
SIMULATION/DMO/RANGE TOTAL					\$225,797,000
TOTAL ANG 2012 MODERNIZATION REQUIREMENTS				\$6,909,791,891	



State Matrix



Weapons Systems Reference Table by State (2012)

Refer to Weapon System Tabs for Specific Information (Classic Associate Units are shown in red.)

	A-10	B-2	C-5	C-17	C-27J	C-130	E-8/C-32	F-15	F-16	F-22	HH-60	KC-135	MQ-1 MQ-9	OSA	AOC/ACS CRC/ADS	Space / Cyber / IO	RC-26 DCGS / SS	GA / ST / TACP	Ranges
AK				•		••					•	•			•	Space		GA	
AL									•			•					••		
AR	•					•						•			•		•		•
AZ									•			•	MQ-1		•		•		
CA						••		•	•		•		MQ-1			CY/SP	••	GA	
CO									•						•	Space			•
CT					•									•	••				
DC									•					•					
DE						•										Cyber			
FL								•							•	Space	••		
GA						•	E-8								•		•	TACP	•
GU																			
HI				•						•		•			•		•		
IA									•			•			•				
ID	•														•	Space		TACP	
IL						•						•			•		•	TACP	
IN	•											•			•		•	TACP	••
KS												•			•	IO/SP	•	TACP	•
KY						•												ST	
LA								•							•			TACP	
MA								•							•		•		
MD	•				•											Cyber			
ME												•							
MI	•				•							•		•	•				•
MN						•			•										
MO		•				•									••				•
MS				•	•										•		•	TACP	•
MT					•			•											
NC						•									•			TACP	
ND					•								MQ-1	•					
NE												•							
NH												•							
NJ							C-32		•			•			•			TACP	•
NM						•											•		
NV													MQ-1/9				•		
NY				•		•••					•		MQ-9		••	Space	•	GA/TP	•
OH					•				•			•	MQ-1		•				
OK									•			•			•			TACP	
OR								•							•			ST	
PA						•						•			•			TACP	•
PR						•									•				
RI						•										Cyber			
SC									•										
SD									•										
TN			•			•						•				Space			
TX						•			•				MQ-1		•	Cyber	•	TACP	•
UT												•			•	IO	SS•		
VA										•							•		
VI																			
VT									•							Cyber			
WA												•			•	Cyber	•	TACP	
WI									•			•			•		•		•
WV			•			•											•		
WY						•										Space			



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A-10

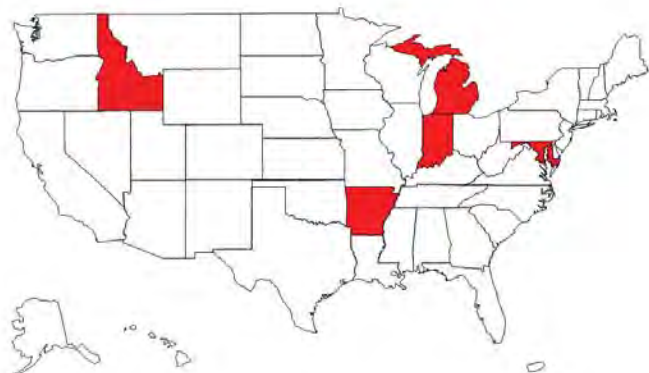


- **Close Air Support**
- **Forward Air Controller – Airborne**
- **Combat Search and Rescue**
- **ANG Units Provide 32% of the Total Fleet**

The A-10 continues to be the premier close air support platform of choice for Overseas Contingency Operations (OCO). With a near continuous presence since 2003 in either Operation ENDURING FREEDOM (OEF) or Operation IRAQI FREEDOM (OIF), the A-10's ability to carry general purpose and precision munitions, along with its extensive loiter time and targeting pod capabilities, provide excellent coverage and capabilities for ground forces.

ANG A-10s will fill 66% of total A-10 deployments over the next year. These ANG aircraft will deploy with dual secure line-of-sight ARC-210 SATCOM radios, the AN/AAR-47 missile warning system, which provides the pilot with 360 degrees of missile launch warning, and the Suite 7A software for the A-10C Precision Engagement (PE) upgrade.

Current A-10 modernization programs include the Lightweight Airborne Recovery System (LARS) to aid in Combat Search and Rescue, and the Scorpion Helmet Mounted Integrated Targeting (HMIT) System, which reduces the time to acquire targets with aircraft sensors from minutes to seconds. Future combat capability will include an integrated noise cancelling, 3-Dimensional cockpit audio system, and an anti-Jam Embedded Global Positioning System (GPS), which will provide the ability to operate in a degraded, denied or deceived GPS environment.



A-10C

2011 Weapons and Tactics Conference

Critical Capabilities List

- Low Cost, Night Vision Goggle (NVG) - Compatible Helmet Mounted Integrated Targeting (HMIT)
- Integrated ALR-69 Legacy System Improvement Program, Digital Radio Frequency Memory Based Electronic Attack Pod, and Electronic Warfare Bus Recording Capability
- Fully Integrated Communications Suite to Include 3D Audio, Personnel Locator System, Enhanced Datalink, Harris Situational Awareness Waveform
- Embedded Global Positioning Satellite/Internal Navigation System with Ability to Operate in GPS Degraded, Denied, or Deceived Environment
- Continued Sensor, Cockpit Display and Recording Upgrades
- Engine Modernization

Essential Capabilities List

- Smart Triple Ejector Rack (STAR)
- Laser Guided Rockets
- Combat Fuel Tank
- Mk-82 High Fragmentation General Purpose Weapon

Desired Capabilities List

- Covert/Overt Landing Taxi Light System
- Instrument Flight Rules (IFR) Heads Up Display
- In Cockpit DC Power Supply for Weather and Safety Information
- Laser Eye and Sensor Protection
- High Capacity RMMD

A-10 EXECUTIVE SUMMARY

Modernization Priority Profiles (\$ Million)

Program	2013	2014	2015
Low Cost Day/Night Helmet Mounted Integrated Targeting	\$7.08 ²	-	-
Electronic Warfare Suite	-	\$4.40 ²	\$4.40 ²
Advanced Digital RWR	\$22.84 ³	-	-
Electronic Attack Pod	-	\$19.80 ²	\$19.80 ²
	\$20.00 ³	\$11.00 ³	-
Fully Integrated Communications Suite	-	\$2.97 ²	\$2.97 ²
	\$12.50 ³	-	-
Lightweight Airborne Radio System Upgrade	\$8.88 ²	\$4.40 ²	-
Anti-Jam Embedded GPS/INS	-	\$4.22 ²	\$2.80 ²
	\$4.50 ³	-	-
Integrated Advanced Targeting Pod/High Resolution Display			
Advanced Targeting Pod Upgrade	\$30.00 ²	\$25.50 ²	-
High Resolution Cockpit Display	-	\$8.64 ²	\$8.64 ²
	\$9.00 ³	-	-
Engine Modernization and Enhancement	-	-	\$23.80 ²
	-	\$48.00 ³	\$16.00 ³

Notes: ¹ 3840 Appropriation ² 3010 Appropriation ³ 3600 Appropriation ⁴ 3080 Appropriation

- Low Cost Day/Night Helmet Mounted Integrated Targeting (HMIT) - Provides off-boresight rapid day/night target acquisition capability and builds pilot situational awareness.
- Electronic Warfare Suite - Provides significant improvement of all RWR functions such as decreased response time and radar threat identification/location, while the pod provides Digital Radio Frequency Memory (DRFM) to improve self-protection against current and emerging radar-guided threats.
- Fully Integrated Communication Suite - Directional Audio will significantly enhance cockpit situational awareness with respect to communication and threat warning. Harris Situational Awareness Waveform will allow Global Positioning System (GPS) data to be displayed on the A-10 Tactical Awareness Display (TAD).
- Lightweight Airborne Radio System (LARS) Upgrade - Allows A-10s to quickly and precisely find downed airmen carrying the latest survival radios.
- Anti-Jam Embedded Global Positioning System/Inertial Navigation System (EGI) - Provides ability to operate in a degraded, denied, or deceived environment.
- Integrated Advanced Targeting Pod/High Resolution Display - Improved cockpit displays will provide valuable clarity as upgraded targeting pod capabilities allow for high definition video, while also replacing unsustainable engine performance and avionics instruments.
- Engine Modernization and Enhancement - Required to increase agility at medium / high altitude, provide increased combat munitions loads, and sustain the A-10 for the next 20 years.

A-10 LOW COST, DAY/NIGHT HELMET MOUNTED INTEGRATED TARGETING (HMIT)

1. Background. The Scorpion HMIT built by Gentex and offered for the A-10 by Raytheon, reduces the time required to acquire targets with aircraft sensors from minutes to seconds, which can make the difference between acquiring a high-value, fleeting target or the target slipping away. Currently, pilots typically acquire targets by pointing the aircraft at the target to put it within the Heads Up Display Field of View, which is time consuming and maneuvers the aircraft closer to the threat. The Scorpion HMIT is a full day/night color cueing and display system compatible with current Night Vision Goggles fielded with A-10 pilots. The HMIT system has magnetic sensors which determine where the pilot is looking and provides rapid acquisition of ground and air targets for hand-off to other aircraft sensors and weapons. The HMIT system allows a pilot to fly parallel to a target to maintain standoff and thus improve survivability, and acquire the target by simply looking at it. The high resolution color display in front of the pilot's eye shows aircraft and data-link network integrated symbology, reducing the heads-down time in the cockpit, further improving survivability and allowing the pilot to quickly build a three dimensional picture of the battlespace. Pilots will no longer need to interpret two-dimensional cockpit displays in terms of the three-dimensional space around them. The Scorpion HMIT also displays Forward Looking Infrared and Charged Couple Device television video images from targeting pods to enhance pilot situational awareness at night and during high task mission segments.

2. Source of Need. Combatant Commander's Urgent Operational Need (UON), dated 26 Sep 08.

3. Impact If Not Funded. Many critical targets have slipped away in Iraq and Afghanistan because pilots could not acquire them in a timely manner. With the ability to slew aircraft sensors to anything that the pilot sees on the ground, while also giving the pilot awareness of friendly troop locations, the HMIT allows targets to be identified much faster, while significantly lowering the potential of target mis-identification, collateral damage, and fratricide.

4. Units Impacted.

122 FW	Ft Wayne, IN	127 WG	Selfridge ANGB, MI	188 FW	Ft Smith, AR
124 WG	Boise, ID	175 WG	Martin State, MD		

5. Contractor. Gentex, Aurora, IL.

6. Cost. PEC: 027131F

Units Required *	Unit Cost **	Program Cost
54 HMIT (3010)	\$131,000	\$7,074,000
Total		\$7,074,000

* 54 units currently purchased.

** Includes 10% Spares.

A-10 ELECTRONIC WARFARE SUITE

1. Background. The A-10 Electronic Warfare (EW) equipment manufactured in the 1980s consists of an ALR-69 Radar Warning Receiver (RWR), an ALQ-131 or an ALQ-184 Electronic Attack (EA) pod, an ALE-47 expendable dispenser, an AAR-47 Missile Warning System (MWS) integrated into a suite by the ALQ-213 Electronic Combat (EC) integration system. The ALQ-213 EC integration system has been upgraded to avoid obsolescence and to insure performance meets aircraft requirements. Both the ALR-69 RWR and the ALQ-131 or ALQ-184 EA pod require a major technical refresh. Both systems have existing Air Force Material Command approved programs. The ALR-69 RWR is undergoing a joint US/international development called Legacy System Improvement Program (LSIP) which will be implemented in two spiral phases, with Phase 1 fully funded except for production and fielding costs, while Phase 2 development is only partially funded. The EA Pod is undergoing an AF funded program to upgrade the existing ALQ-131 or ALQ-184 with a Digital Radio Frequency Memory (DRFM), called Pod Upgrade Program (PUP), and is in source selection. RWR performance shortfalls include inadequate response time, processing overload conditions, unacceptable identification performance, inadequate threat detection capability, unacceptable threat geo-location and lack of digital information. EA pod performance shortfalls include unacceptable identification performance and inadequate reduction in lethality. The ALQ-213 EC integration system requires the ability to record the EW bus.

2. Source of Need. A-10 Electronic Warfare Capability Development Document (CDD) 16 Apr 07.

3. Impact if Not Funded. The A-10 will remain at risk to current radar threats and have little capability against most advanced threat systems resulting in areas of “denied access” that will significantly reduce the ability of the A-10 to accomplish missions.

4. Units Impacted.

122 FW Fort Wayne, IN	127 WG Selfridge ANGB, MI	188 FW Ft Smith, AR
124 WG Boise, ID	175 WG Martin State, MD	

5. Contractors. BAE, Yonkers, NY, Nashua, NH; EDO, North Amityville, NY; Georgia Tech Research Institute, Atlanta, GA; ITT Avionics, Clifton, NJ; Lockheed Martin, Owego, NY & Fort Worth, TX; Northrop Grumman, Rolling Meadows, IL; Raytheon, Goleta, CA.

6. Cost. PEC; 027131F / 27040F

Units Required	Unit Cost *	Program Cost
RWR ALR-69 LSIP S1&2 NRE (3400)	\$22,840,000	\$22,840,000
108 ARL-69 LSIP S1&2RWRs (3010)	\$81,400	\$8,791,200
EA Pod NRE (3600)	N/A	\$31,000,000
30 EA Pod Upgrades (3010)	\$1,320,000	\$39,600,000
Total		\$102,231,200

* Includes 10% spares.

A-10 FULLY INTEGRATED COMMUNICATIONS SUITE

1. Background. The A-10 communications suite improvements consist of the ARC-210 radio, three-dimensional (3-D) Audio, Enhanced Data Link and Harris Situation Awareness (SA) Waveform. Two ARC-210 multi-band and multi-mode digital radios that include Satellite Communications to meet the urgent operational need for Simultaneous Beyond Line-of-Sight and Secure Line-of-Sight communications have been fully funded and are currently fielding. Integration of Harris SA Waveform in the ARC-210 radio would allow ground troops Global Positioning System data, transmitted by existing radios proliferated by the thousands to ground troops, to be displayed on the A-10 Tactical Awareness Display, reducing the risk of fratricide and the workload on the pilot in a Combat Search and Rescue (CSAR) or close air support scenario. The integration of noise cancelling and 3-D audio in the cockpit will increase SA by spatially separating aural warning and radio signals and providing angular cueing to ground and air threats when used in conjunction with the Helmet Mounted Integrated Targeting System. This spatial separation and reduction in ambient noise significantly increases the pilot's ability to process information coming simultaneously from multiple radios and warning systems. The continued upgrades to data links and targeting systems and the requirement to operate the A-10 through 2030 require a fully integrated communications suite.

2. Source of Need. Critical capability shortfall identified at the ARC 2011 WEPTAC.

3. Impact If Not Funded. Not funding 3-D audio will severely impact the pilot's ability to integrate the multitude of radio and aural warning cues in the aircrafts spatial environment, limiting situational awareness, and reducing reaction time and survivability. Not funding Harris SA Waveform increases the task loading on the pilot in time-critical CSAR missions, hindering mission coordination and timely recovery of downed aircrew.

4. Units Impacted.

122 FW Ft Wayne, IN	127 WG Selfridge ANGB, MI	188 FW Ft Smith, AR
124 WG Boise, ID	175 WG Martin State, MD	

5. Contractor. Directional (3-D) Audio - Terma North America, Crystal City, VA; Raytheon, Waltham, MA; Situational Awareness Waveform - Harris Corp, Melbourne, FL.

6. Cost. PEC: 027131F

Units Required	Unit Cost *	Program Cost
Directional Audio NRE (3600)	\$10,500,000	\$10,500,000
108 Directional Kits (3010)	\$42,100	\$4,546,800
162 Group C Kits (3010)	\$6,700	\$1,085,400
7 Unit Test Equipment (3080)	\$43,800	\$306,600
Harris SA Waveform NRE (3600)	N/A	\$2,000,000
Total		\$18,438,800

* Includes 10% spares.

A-10 LIGHTWEIGHT AIRBORNE RECOVERY SYSTEM (LARS) UPGRADE

1. Background. There are numerous fielded Combat Search and Rescue (CSAR) survival radios that provide a wide spectrum of capability. These radios range from the basic PRC-90 to the PRQ-7 Combat Survivor-Evader Locator (CSEL) radio. The AN/ARS-6(v)6 LARS cockpit radio currently installed in select A-10 aircraft is not compatible with the newer survivor radios and can only display range and bearing to the survivor. The newer survivor radios offer more accurate information (Geo-Location, Text Messaging, and Situation Reports) to CSAR forces attempting to rescue isolated personnel. The AN/ARS-6(v)12 LARS is compatible with all CSAR survival radios. It is integrated with all cockpit displays, and is capable of presenting geographic coordinates and text messaging transmitted from the newer survival radios, such as PRQ-7 CSEL and the Hook-112G. Additionally, the AN/ARS-6(v)12 LARS provides the ability to quickly and securely pass vital survivor data (coordinates and messaging) between all CSAR aircraft, providing a better coordinated and more covert rescue, while protecting both the survivor as well as the rescuers. The AN/ARS-6(v)12 LARS also has improved antennas for better coverage and reliability.

2. Source of Need. Combat Air Force (CAF) Operational Requirements Document CAF 401-91-I/II/III-D for A/OA-10 Aircraft Multi-Staged Improvement Program (MSIP) Oct 1999. LARS AN/ARS-6(v)12 1067 Modification Proposal, 24 Jul 2008.

3. Impact If Not Funded. Without upgrading to the AN/ARS-6(V)12 LARS, rescue forces lack secure communications and exact GPS location to both the PRC-112G and the PRQ-7 CSEL survivor radios, which are currently fielded by ground forces and aircrew. These modern CSEL radios significantly shorten the time required to locate and recover downed airmen, improving the chance of recovery and reducing rescue force exposure to enemy fire. The lack of these capabilities hinders mission coordination and represents a significant operational disadvantage during the inherently dangerous and time-critical CSAR scenario.

4. Units Impacted.

122 FW Ft Wayne, IN	127 WG Selfridge ANGB, MI	188 FW Ft Smith, AR
124 WG Boise, ID	175 WG Martin State, MD	

5. Contractor. Cubic Corp, San Diego, CA.

6. Cost. PEC: 027131F

Units Required	Unit Cost *	Program Cost
108 LARS (3010)	\$123,000	\$13,284,000
Total		\$13,284,000

* Includes 10% spares

**A-10 ANTI-JAM EMBEDDED GLOBAL POSITIONING SYSTEM/
INERTIAL NAVIGATION SYSTEM (EGI)**

1. Background. The A-10 uses an Embedded Global Positioning System (GPS)/Inertial Navigation System (INS) for precision navigation and weapons employment. The EGI is the heart of the A-10 avionics system and virtually every system on the aircraft depends on the highly accurate position, orientation, and velocity data it provides. Jamming equipment has evolved to counter this capability with technology that may degrade and deny the effectiveness of the EGI in the aircraft, affecting navigation, positional awareness and the accurate employment of ordnance. There is a multi-stage option to combat these enemy actions. The first step is the installation of CRPA antennae that can significantly nullify the affects jamming systems based on the aircraft distance from that system. The follow-on option is Selective Availability Anti-Spoofing Modules (SAASM), which combat these hostile or hazardous outside jamming influences to protect Precise Positioning System (PPS) and Standard Positioning System (SPS) for defense and aerospace uses. Additionally, a current FAA ruling mandates a SAASM-based Automatic Dependent Surveillance-Broadcast (ADS-B) EGI by 2020 for all aircraft to support its transition of the air traffic control system from a radar-based system to a satellite-based system capable of providing better surveillance precision and reliability. Upgrading the A-10's current EGI system will support this FAA ruling while providing increased capability to operate in a GPS degraded environment.

2. Source of Need. FAA Rule - 14 CFR Part 91 [Docket No. FAA-2007-29305; Amdt. No.91-314], RIN 2120-AI92 - Automatic Dependent Surveillance-Broadcast (ADS-B) Out Performance Requirements to Support Air Traffic Control (ATC) Services, 28 May 2010.

3. Impact If Not Funded. Not funding a countermeasure for GPS jamming will severely impact the ability of the A-10 to operate in the Close Air Support (CAS) precision dependent combat environment of current and future theaters of operation. The ability to identify targets and employ munitions with surgical precision will be hindered, and it will increase the risk of collateral damage to both ground forces and civilians.

4. Units Impacted.

122 FW Ft Wayne, IN
124 WG Boise, ID

127 WG Selfridge ANGB, MI
175 WG Martin State, MD

188 FW Ft Smith, AR

5. Contractor. TBD.

6. Cost. PEC: 027131F

Units Required	Unit Cost *	Program Cost
Anti-Jam EGI NRE (3600)	N/A	\$4,500,000
108 Anti-Jam EGI (3010)	\$65,000	\$7,020,000
Total		\$11,520,000

* Includes 10% spares.

A-10 INTEGRATED ADVANCED TARGETING POD/HIGH RESOLUTION DISPLAY

1. Background. With the growing dependency on targeting pod imagery and connectivity to leadership and ground forces, it is imperative that the most capable targeting pods be fielded to combat aircraft. The constantly improving technology of Generation Four and Sensor Enhancement (SE) systems are making legacy pods obsolete. These legacy targeting pods need to be upgraded to provide the most capable connectivity, improved software and tracking upgrades, as well as the most advanced infrared and Charged Couple Device (CCD) technology. In order to maximize the effectiveness of these Advanced Targeting Pod (ATP) capabilities, A-10 aircraft require new high resolution displays. The displays will fully utilize the targeting pod image quality, improve available processing power, and replace aging flight instruments. By connecting the new displays to the ARC-210 radio, pilots will have the ability to securely transfer data, such as a targeting pod scenes, joint tactical air controller taskings, and updated target area imagery. The ability to transfer data is critical for rapid coordination with ground units during close air support missions and with command and control assets during time sensitive and emerging target operations. Furthermore, the displays will contain additional processing capacity that allows for the manipulation of data external to the aircraft Operational Flight Program (OFP). This additional processing capacity provides pilots with the ability to insert mission planning data pre-mission via USB like interfaces, while opening low cost pathways for the integration of future weapons and updates without the costly and time consuming process of changing the OFP. Pilot selectable display options will provide electronic instrument flight displays (attitude, performance, and navigation) when required. The A-10 engine instrumentation is outdated. A digital display of these instruments will contribute to A-10 sustainability through 2030, while allowing additional display options as the situation requires.

2. Source of Need. Critical capability shortfall identified at the ARC 2011 WEPTAC.

3. Impact If Not Funded. Pilots will remain unable to exploit the improved image quality of next generation targeting pods to increase standoff, while determining the intent of enemy combatants, and rapidly integrate emerging technologies. This will degrade their ability to effectively execute close air support, combat search and rescue and time sensitive target taskings.

4. Units Impacted.

122 FW Ft Wayne, IN	127 WG Selfridge ANGB, MI	188 FW Ft Smith, AR
124 WG Boise, ID	175 WG Martin State, MD	

5. Contractor. BAE, Greenlawn, NY; DRS, Dayton, OH; Elbit Systems of America, Fort Worth, TX; Raytheon, Indianapolis, IN; Rockwell Collins, San Jose, CA.

6. Cost. PEC: 027131F

Units Required	Unit Cost *	Program Cost
NRE (3600)	N/A	\$9,000,000
108 Color Displays (3010)	\$160,000	\$17,280,000
37 ATP Upgrades (3010)	\$1,500,000	\$55,500,000
Total		\$81,780,000

*Includes 10% spares.

A-10 ENGINE MODERNIZATION AND ENHANCEMENT

1. Background. The A-10 has documented thrust deficiencies in its operational environment. In order to meet Combatant Commander tasking at high-density altitude locations such as the current Operation ENDURING FREEDOM theater, A-10 pilots must reduce fuel loads, restrict take-off times to early morning hours, or refuse tasking that increases gross weights to unsupportable and unsafe limits. In addition, the aircraft does not perform well at medium and high altitudes, putting pilots at increased risk to rapidly proliferating ground-based threats and forcing commanders to provide separate low-altitude A-10 air refueling tracks. The proposed solution is a three phase upgrade to the current engine. Phase 1, the Boltless Rotor Upgrade, has been funded for development, and improves engine durability while lowering operating costs. The follow-on phases are not funded and will build upon the Phase 1 upgrade. Phase 2A includes an increase in turbine temperature, which allows for improved thrust by utilizing a portion of the enhanced temperature control capability of Phase 1. Phase 2B provides a digital fan speed control, which will eliminate thrust droop, and once again increase engine durability. Phase 3 is a thrust increase, including significant hardware changes, that requires more research before any cost estimates will be available. For over ten years the Air Reserve Component Weapons and Tactics Conference has listed engine upgrades or new engines as a high priority for the A-10.

2. Source of Need. Concept Development Document (CDD) approved 17 Mar 05 by the Air Force Requirements for Oversight Council (AFROC). CDD Version 1.1 approved 21 Apr 06.

3. Impact If Not Funded. A-10 mission success is based on the ability of the airframe to adequately perform the assigned mission. Tasking has migrated from low altitude (the design criteria of the aircraft) to medium/high altitude. Future viability as a persistent, lethal platform is dependent on adequate thrust and agility in a maximum gross weight configuration both at take-off and medium/high altitude.

4. Units Impacted.

122 FW Ft Wayne, IN	127 WG Selfridge ANGB, MI	188 FW Ft Smith, AR
124 WG Boise, ID	175 WG Baltimore, MD	

5. Contractor. GE Aircraft Engines, Lynn, MA; Pratt & Whitney, East Hartford, CT.

6. Cost. PEC: 027131F

Units Required	Unit Cost *	Program Cost
Phase 1: NRE (3600)	N/A	\$1,500,000**
Phase 1: 216 Engines (3840)	\$240,000	\$51,840,000
Phase 2: NRE (3600)	N/A	\$64,000,000
Phase 2: 216 Engines (3010)	\$66,000	\$14,256,000
Total		\$131,596,000

* Includes 10% spares.

** \$21,000,000 already funded.



C2

Command & Control



- Air Battle Management
- Air Traffic Control
- c-NAF Integration/Augmentation
- Military Range Control
- Centralized Control
- Decentralized Execution
- Ground Controlled Intercept
- Flight Safety Monitoring
- Air Defense and Surveillance for North America



The ANG C2 weapons systems are integral to the joint fight in overseas contingency operations, and transforming the rapidly expanding Homeland Defense mission area.

COMPONENT NUMBERED AIR FORCE (c-NAF) INTEGRATION The c-NAF is comprised of an Air and Space Operations Center (AOC) and Air Force Forces (AFFOR) A-Staff. The AOC weapon system is the capstone of the Theater Air Control System (TACS) employed by the Commander, Air Force Forces (COMAFFOR) providing centralized control and decentralized execution of aerospace forces to the Joint Force Air Component Commander (JFACC). The A-Staff is organized functionally, with a command section, personal staff and functional staff A1 through A9, as well as a variety of cross-functional teams that support the COMAFFOR as the USAF service component commander.



CONTROL AND REPORTING CENTER (CRC)/AIR CONTROL SQUADRON (ACS) An ACS is the only Air Force 24/7 deployable and sustainable ground air Battle Management Command and Control (BMC2) platform. The CRC, at operational and tactical levels of operations, provides surveillance, weapon control, tactical communications, data links, and combat-related air battle management of joint air operations with real-time, shared situational awareness.

AIR DEFENSE SECTOR (ADS) An ADS provides tactical communication and data-link capabilities to bridge communications between systems used by civil authorities and other military units responsible for planning, directing, coordinating, and controlling forces for air surveillance, air defense, and control of sovereign U.S. airspace (including the National Capital Region), ensuring air defense for the entire North American continent.

Command and Control 2011 Weapons and Tactics Conference

Critical Capabilities List

Component Numbered Air Force (C-NAF)/Air Operations Center (AOC):

- Targeting Application Systems
- Joint Range Extension
- Communications System Training Lab
- Network Management Tool
- Core Radio Package and Antenna

Control and Reporting Center (CRC)/Air Defense Sector (ADS):

- Theatre Deployable Communications
- Power Distribution Panel System
- Tactical Quiet Generators
- Battle Control Center (BCC) DMO
- Portable Training Device to Provide Electronic Attack for TPS-75 Radar
- IA Compliant Remote Sensor Fusion

Essential Capabilities List

C-NAF/AOC:

- Trusted Thin Client
- Airborne ISR Simulator
- Cross Domain Solution

CRC/ADS:

- Full C2 Cross-Domain Capability
- Centralized Live Fly Network Capability to Meet Training Requirements

Desired Capabilities List

- None

C2 EXECUTIVE SUMMARY

Modernization Funding Profiles (\$ Million)

Program	2013	2014	2015
Control and Reporting Center (CRC) Theater Deployable Communications (TDC)	\$2.00 ⁴	\$2.00 ⁴	\$2.00 ⁴
Control and Reporting Center (CRC) Power Distribution Panel (PDP) System	\$2.00 ¹	\$2.20 ¹	\$3.00 ¹
Control and Reporting Center (CRC) Tactical Quiet-Generators (TQG)	\$2.56 ¹	\$2.00 ¹	\$2.00 ¹
Air Operations Center (AOC) Targeting Applications	\$0.52 ⁴	-	-
Air Defense Sector (ADS) Tactical Satellite Communications (TACSAT)	\$1.20 ⁴	-	-
Air Operations Center (AOC) Joint Range Extension	\$0.98 ⁴	-	-

Notes: ¹ 3840 Appropriation ² 3010 Appropriation ³ 3600 Appropriation ⁴ 3080 Appropriation

- CRC Theater Deployable Communications (TDC) - Provides network / reach back capable assets to round out shortfalls within the fielded systems of record.
- CRC Power Distribution Panel (PDP) System - Provides power (120/208 Volt / 60 HZ, 3 Phase) that is all weather, load balancing, and provides equipment and personnel protection from electrical hazards.
- CRC Tactical Quiet Generators (TQG) - Provides improved generator capability (125KVA, 120/208 Volt, 3 Phase) to replace existing legacy generators enabling reduction of assets and smaller deployment footprint.
- AOC Targeting Applications - Enables training and certification for point mensuration by targeteers, and reach back capability supporting operational AOC requirements.
- ADS TACSAT - Provides multi-frequency, high band (400-512 MHz) capable, anti-jam, secure, data capable TACSAT for 100% beyond line-of-sight coverage in the CONUS.
- AOC Joint Range Extension - Provides air defense sectors the ability to train on current data links.

CONTROL AND REPORTING CENTERS (CRC) THEATER DEPLOYABLE COMMUNICATIONS (TDC)

1. Background. Air Combat Command, as AF Lead Command for Command and Control (C2), has tasked the ANG to provide ten Air Control Squadrons (ACS) to execute mission functions and capabilities of a deployable Control and Reporting Center (CRC) in support of air operations. The CRC is a mobile battle management C2 capability with deployable radar elements of the Theater Air Control System (TACS). The CRC integrates a comprehensive air picture via multiple data links from air, sea, and land-based sensors, as well as from its embedded surveillance and control radars. It performs decentralized C2 of joint operations by conducting threat warning, battle management, theater missile defense, weapons control, combat identification, and strategic communications. All Air National Guard ACS units are critically short various end items and quantities of each.

2. Source of Need. ANG 2011 Weapons and Tactics Conference critical requirements.

3. Impact If Not Funded. ANG ACS units will be unable to meet combatant commander tasking due to the lack of specialized equipment required to support combat operations in the theater of operations. Specifically, the lack of proper TDC equipment across the CRC will eliminate the Joint Force Air Component Commander's ability to execute the air war because CRCs will be unable to generate an air picture, and provide management of the airspace.

4. Units Impacted.

103 ACS	Orange, CT	117 ACS	Savannah, GA	133 TS	Fort Dodge, IA
107 ACS	Luke AFB, AZ	121 ACS	St Louis, MO	134 ACS	McConnell AFB, KS
109 ACS	Salt Lake City, UT	123 ACS	Blue Ash, OH	141 ACS	Punta Borinquen, PR
116 ACS	Warrenton, OR	128 ACS	Volk Field, WI	255 ACS	Gulfport, MS

5. Contractor. TBD

6. Cost. PEC: 502672

Units Required	Unit Cost	Program Cost
12 Unit Requirements (3080)	\$500,000	\$6,000,000
Total		\$6,000,000

CONTROL AND REPORTING CENTERS (CRC) POWER DISTRIBUTION PANEL SYSTEM (PDPS)

1. Background. ACC as the AF Lead Command for Command and Control (C2) has tasked the ANG to provide 10 Air Control Squadrons (ACS) to execute mission functions and capabilities of a deployable Control and Reporting Center (CRC) in support of air operations. The CRC is a mobile Battle Management C2 capability with the deployable radar elements of the Theater Air Control System (TACS). The CRC integrates a comprehensive air picture via multiple data links from air, sea, and land-based sensors, as well as from its imbedded surveillance and control radars. It performs decentralized C2 of joint operations by conducting threat warning, battle management, theater missile defense, weapons control, combat identification, and strategic communications. Properly sized and configured PDPSs enable consolidation & reduction of numerous legacy electrical power production units. The primary PDPS must be capable of load balancing, 400 Amps, 3-phase, 120/208/VAC, (5) wire, with cam-type receptacles, and meet NEMA 3R requirements for weatherproofing. Each secondary power distribution box must be 100 amp, 3-phase, 120/208 VAC, input, with 120/208 VAC, 3-phase output; all meeting NEMA 3R requirements for weatherproofing. Each tertiary PDPS must be capable of a minimum of 30 AMP, three and single phase, 120/208 VAC, input, with 120/208 VAC single and three phase output, all meeting NEMA 3R requirements for weatherproofing. All PDPS must have user-defined inputs, outputs and amperage ratings meeting specifications for the equipment configuration.

2. Source of Need. ANG Weapons and Tactics Conference critical requirements for 2011.

3. Impact If Not Funded. Lack of proper PDPSs at each element of the CRC will continue to drive additional manpower and logistical resources necessary to operate legacy power units with an increased risk to loss of life and /or catastrophic equipment failure. Elements of the CRC will continue to be limited in response, operating, ability to incorporate evolving systems and to changing mission requirements required to meet urgent war fighter needs.

4. Units Impacted.

103 ACS	Orange, CT	117 ACS	Savannah, GA	133 TS	Fort Dodge, IA
107 ACS	Luke AFB, AZ	121 ACS	St Louis, MO	134 ACS	McConnell AFB, KS
109 ACS	Salt Lake City, UT	123 ACS	Blue Ash, OH	141 ACS	Punta Borinquen, PR
116 ACS	Warrenton, OR	128 ACS	Volk Field, WI	255 ACS	Gulfport, MS

5. Contractor. TBD.

6. Cost. PEC: 0502672

Units Required	Unit Cost	Program Cost
24 Systems (3840)	\$300,000	\$7,200,000
Total		\$7,200,000

CONTROL AND REPORTING CENTERS (CRC) TACTICAL QUIET GENERATORS (TQG)

1. Background. Air Combat Command, as the AF Lead Command for Command and Control (C2), has tasked the ANG to provide 10 Air Control Squadrons (ACS) to execute mission functions and capabilities of a deployable Control and Reporting Center (CRC) in support of battle management operations. The CRC is a mobile battle management C2 capability with deployable radar elements of the Theater Air Control System (TACS). The CRC integrates a comprehensive air picture via multiple data links from air, sea, and land-based sensors, as well as from its imbedded surveillance and control radars. It performs decentralized C2 of joint operations by conducting threat warning, battle management, theater missile defense, weapons control, combat identification, and strategic communications. 100KW TQGs with an aural signature of 70dBA or less at 7 meters are required to support electrical power requirements. The generator set must be capable of 120/208/240/416 volt, 50/60 Hz output, and be a self-contained, skid-mounted unit mounted on a trailer. It should be equipped with controls, instruments, and accessories for operation as a single unit or in parallel with another unit of the same class and mode. The system must be configured as follows: diesel engine powered, brushless generator, excitation system, speed governing system, fuel system, 24 volt starting system, electronic control and fault system, and a Electronic Modular Control Panels (EMCP) for Human Machine Interface (HMI). System must be operational in climate conditions range of -25° F to + 120° F.

2. Source of Need. ARC 2011 Weapons and Tactics Conference critical requirements.

3. Impact If Not Funded. Lack of properly sized TQGs will increase airlift requirements for the Joint Forces Air Component Commander in order to properly operate and sustain mission operations across each element of the CRC. Without such TOGs, CRC elements will be challenged logistically, limited in operations, and be unable to satisfactorily integrate with newer and evolving systems. Meeting mission requirements for urgent needs of the warfighter will continue to be overwhelming and extremely difficult.

4. Units Impacted.

103 ACS	Orange, CT	117 ACS	Savannah, GA	133 TS	Fort Dodge, IA
107 ACS	Luke AFB, AZ	121 ACS	St Louis, MO	134 ACS	McConnell AFB, KS
109 ACS	Salt Lake City, UT	123 ACS	Blue Ash, OH	141 ACS	Punta Borinquen, PR
116 ACS	Warrenton, OR	128 ACS	Volk Field, WI	255 ACS	Gulfport, MS

5. Contractor. TBD

6. Cost. PEC: 0502672

Units Required	Unit Cost	Program Cost
80 Systems (3080)	\$82,000	\$6,560,000
Total		\$6,500,000

AIR OPERATIONS CENTER (AOC) TARGETING APPLICATIONS

1. Background. ANG AOC units require an additional two Targeting Application Workstation Systems (TAWS) and two 14.5 terabyte servers on SIPRNET to meet their responsibilities to their aligned AOCs as directed by Program Action Directive (PAD) 10-2. Targeteers in a combined air operations center require training and certification on point mensuration. The Air Force system of record and AOC baseline system for point mensuration is TAWS. Point mensuration is a process requiring two-person accountability; one TAWS for each pair of targeteers. The ARC AOC units are allocated only two TAWS; one SIPRNET and one on the Joint Worldwide Intelligence Communications System (JWICS). One TAWS on SIPRNET is inadequate to train and certify personnel, and impacts providing an AOC sufficient federated targeting support. Additionally, limited capacity of geospatial product and the imagery product libraries, which store digital point positioning database imagery, impedes attaining and maintaining functional and geographical mission readiness. All ANG AOC augmentation units require these TAWS workstations and additional storage capacity to meet training certification and provide targeting reachback support for their aligned AOC.

2. Source of Need. PAD 10-2, CJCSI 3505.01A.

3. Impact If Not Funded. Without additional TAWS workstations and storage servers, continuation training and certification of personnel will be limited. A units' ability to produce certified point droppers to meet requirements for current deployment tasking, and the inability to provide aligned AOCs sufficient federated targeting support will be affected. ANG AOC units will remain limited to certifying or training only two targeteers at a time. Additionally, large geospatial and imagery datasets would have to be downloaded, delaying operations and consuming communication resources.

4. Units Impacted.

102 IW	Otis ANGB, MA	112 AOS	State College, PA	183 FW	Springfield, IL
103 AW	Bradley ANGB, CT	152 AOG	Syracuse, NY		
110 AW	Battle Creek, MI	157 AOG	Jefferson Barracks, MO		

5. Contractor. DELL (hardware), GSA contract online; BAe (software), San Diego, CA.

6. Cost. PEC: 52672

Units Required	Unit Cost	Program Cost
16 TAWS (3080)	\$8,000	\$128,000
14 GPL/IPL Storage (3080)	\$28,000	\$392,000
Total		\$520,000

AIR DEFENSE SECTOR (ADS) TACTICAL SATELLITE COMMUNICATIONS (TACSAT)

1. Background. Air defense sectors require a TACSAT capability for beyond-line-of-sight communications to achieve complete radio and data coverage. The TACSAT must have capability for operating in multiple frequency bands such as SATCOM/UHF/VHF and include 400-512 MHz used by civil authorities. It must have anti-jam, encryption, voice and data capabilities. The SATCOM antenna will be located at the ADS, and the UHF/VHF voice signal will be sent to remote antenna at various locations throughout the CONUS. TACSAT capability would provide communications connectivity for homeland defense and civil support operations. If satellite access is denied, ADS communications with air defense aircraft will rely on legacy UHF/VHF radios with limited range. Employment of TACSAT from the ADS will significantly improve voice and data connectivity in all NORAD-NORTHCOM (N-NC) mission sets. To complement voice communications, there are documented requirements for access to data, which dictate a need for wideband radio for mobile networking and provides secure data to the tactical Internet at rates of up to 5 megabits per second. The required radio must support operations in the 30 MHz to 2 GHz band with wideband channel capability in the 1.2 MHz and 5 MHz bands. The system should be capable of supporting Advanced Networking Wideband Waveform (ANW2); narrowband with 10 watts output minimum, and SATCOM with 20 watts minimum. Additionally the radio must be software programmable and capable of supporting Top Secret transmissions.

2. Source of Need. ARC 2011WEPTAC Critical Requirement.

3. Impact If Not Funded. Command and control entities will be unable to communicate with aircraft during critical missions due to LOS limitations. Furthermore, the lack of situational awareness due to LOS limitations of existing data links will limit the air defense sector's ability to successfully execute the mission. Relying on legacy LOS communications is an unnecessary risk in the execution of NORAD-NORTHCOM missions.

4. Units Impacted.

WADS McChord AFB, WA EADS Rome, NY

5. Contractor. Harris Corp., Melbourne, FL; Raytheon Corp., Waltham, MA.

6. Cost. PEC: 0501311

Units Required	Unit Cost	Program Cost
60 TACSAT Systems (3080)	\$20,000	\$1,200,000
Total		\$1,200,000

AIR OPERATIONS CENTER (AOC) JOINT RANGE EXTENSION (JRE)

1. Background. The AOC Interface Control Cell requires the Joint Range Extension system to meet training requirements for datalink operations. ANG Air Operations Groups lack capability to train personnel to the Task Training List (TTL) for Link-16 operations mandated by ACC. Current systems and equipment authorizations remain unfunded and unfilled by the AOC program office. AOC units must be equipped and trained to the same level of proficiency as counterparts to ensure quality and effective personnel are available to meet warfighter tasking.

2. Source of Need. AF PAD 10-2, 13-1 AOCV1, AFI 33-115 V2.

3. Impact If Not Funded. The AOC Interface Control Team will continue to be undertrained. AOC Air Reserve Component personnel will continue to report for duty at their active duty AOC's with little or no training and lacking experience operating a key piece of equipment. The lack of training will lead to degradation of the overall Combat Operations Division's situational awareness.

4. Units Impacted.

102 IW	Otis ANGB, MA	112 AOS	State College, PA	183 FW	Springfield, IL
103 AOG	Bradley ANGB, CT	152 AOG	Syracuse, NY		

5. Contractor. TBD.

6. Cost. PEC: 52672

Units Required	Unit Cost	Program Cost
5 JRE (3080)	\$195,000	\$975,000
Total		\$975,000

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C-5 & C-17



- **Strategic Airlift**
- **Outsized or Oversized Cargo Airlift**
- **Aeromedical Evacuation Missions**
- **ANG C-5 Units Provide 21% of the Total Fleet**
- **ANG C-17 Units Provide 8% of the Total Fleet**

The C-5 Galaxy, with its unmatched payload capability and delivery speed, provides AMC intertheater airlift in support of US national defense strategy. The C-5 provides all-weather passenger and outsized/oversized cargo airlift, air land, and special operations-type missions. With the C-5's unique visor door and kneeling capability, the aircraft can both load and unload (roll on/roll off) simultaneously. The aircraft can carry fully equipped, combat-ready military units to any point in the world on short notice, and provide critical field support to sustain the fighting force. The ANG operates a fleet of twenty-one C-5A aircraft located at 164th Airlift Wing (AW) at Memphis, TN and 167th AW at Martinsburg, WV.



The C-17 Globemaster III is the Nation's core military airlifter and continues to excel in a wide range of operational mission scenarios. It provides the flexibility to support both intertheater and intratheater missions and allows AMC to significantly improve throughput during contingency operations. Using C-17s as an intratheater airlift platform has provided relief to the C-130 fleet and also reduced ground forces' dependence on vehicle convoys.

The ANG operates seventeen C-17 aircraft assigned to the 105th AW, Stewart ANGB, NY and the 172nd AW in Jackson, MS. The 154th AW in Hickam AFB, HI and the 176th Wing at Elmendorf AFB, AK are ANG associate units.



C-5 and C-17

2011 Weapons and Tactics Conference

Critical Capabilities List

C-5:

- Structural Issues
- Large Aircraft Infrared Countermeasures (LAIRCM) and Next Generation Threat Detection
- Equipment Rack for Portable Electronic Equipment
- Real-Time Information in the Cockpit (RTIC) and Data Link (DL)
- Brake Temperature Monitoring System (BTMS)

C-17:

- Real-Time Information in the Cockpit (RTIC) and Data Link (DL)
- Class III Electronic Flight Bag (EFB)
- Radar Warning Receiver (RWR)
- 3-Engine Airdrop Escape Performance Data
- Large Aircraft Infrared Countermeasures (LAIRCM) and Next Generation Threat Detection

Essential Capabilities List

C-5:

- Broad Spectrum Laser Eye Protection
- Loadmaster In-Flight Restraint Harness

C-17:

- Stick-Mounted Electronic Countermeasures Dispense System (SMEDS)
- Enhanced Visual System (EVS) IR HUD
- Hostile Fire Indicator (HFI)

Desired Capabilities List

C-5:

- Electronic Flight Bag (EFB)

C-17:

- None

C-5 & C-17 EXECUTIVE SUMMARY

Modernization Priority Profiles (\$ Million)

Program	2013	2014	2015
C-5			
Structural Issues	\$39.48 ¹	\$39.48 ¹	\$39.48 ¹
Large Aircraft Infrared Countermeasures and Next Generation Threat Detection System	\$7.50 ²	\$75.00 ²	\$75.00 ²
	\$10.00 ³	-	-
	\$20.33 ²	\$20.33 ²	\$20.33 ²
	\$6.00 ³	-	-
Real-Time Information in the Cockpit and Data Link	\$0.53 ²	\$5.30 ²	\$5.30 ²
	\$4.00 ³	-	-
Brake Temperature Monitoring System	\$4.00 ²	\$28.00 ²	\$28.00 ²
	\$3.00 ³	-	-
C-17			
Real-Time Information in the Cockpit and Data Link	\$0.53 ²	\$4.24 ²	\$4.24 ²
	\$4.00 ³	-	-
Class III Electronic Flight Bag	\$0.24 ²	\$3.84 ²	-
	\$2.40 ³	-	-
Radar Warning Receiver	\$1.22 ²	\$9.76 ²	\$9.76 ²
	\$10.00 ³	-	-
Large Aircraft Infrared Countermeasures and Next Generation Threat Detection System	\$13.60 ²	\$13.60 ²	\$13.60 ²
	\$16.75 ²	\$16.75 ²	\$16.75 ²
	\$6.00 ³	-	-

Notes: ¹ 3840 Appropriation ² 3010 Appropriation ³ 3600 Appropriation ⁴ 3080 Appropriation

C-5

- C-5 Structural Issues - Replaces aging cracked structures which minimizes or eliminates current 20 percent or more cargo weight reduction.
- C-5 Large Aircraft Infrared Countermeasures (LAIRCM) and Next Generation Threat Detection System - Allows aircraft to survive in lethal threat environments where MANPADS are widely used by providing non pyrotechnic countermeasure solutions. Provides a 360 degree (azimuth and elevation) picture displayed at the navigator, loadmaster, and cockpit flight stations.
- C-5 Real-Time in the Cockpit (RTIC) and Data Link (DL) - Provides a robust, secure, and scalable line-of-sight (LOS) and beyond-line-of-sight (BLOS) connectivity with the network centric battlefield.
- C-5 Brake Temperature Monitoring System (BTMS) - Provides critical information if heavy braking is encountered or after the discovery of a brake malfunction.

C-17

- C-17 Real-Time in the Cockpit (RTIC) and Data Link (DL) - Provides a robust, secure, and scalable line-of-sight (LOS) and beyond-line-of-sight (BLOS) connectivity with the network centric battlefield.

- C-17 Class III Electronic Flight Bag (EFB) - Adds an electronic information management device that improves situational awareness, cockpit efficiency, productivity, and allows aircrews to safely adapt to in-flight mission changes.
- C-17 Radar Warning Receiver (RWR) - Modern RWRs feature digital receiver architectures, increased sensitivity and improved threat location accuracy.
- C-17 Large Aircraft Infrared Countermeasures (LAIRCM) and Next Generation Threat Detection System - Allows aircraft to survive in lethal threat environments where MANPADS are widely used by providing non pyrotechnic countermeasure solutions. Provides a 360 degree (azimuth and elevation) picture displayed at the navigator, loadmaster, and cockpit flight stations.

C-5 STRUCTURAL MODERNIZATION

1. Background. The C-5A fleet provides twenty-five percent of the U.S. outsize cargo airlift capability. Confirmed cracking of the C-5A aft crown skins due to stress and corrosion requires replacement fleet wide to avoid extensive groundings and flight restrictions.

2. Source of Need. Air Mobility Command Validated AF Form 1067; AMC C-5 Requirements & Planning Council (R&PC), Jun 2011.

3. Impact if not funded. The initial restriction will reduce the cargo load factor by twenty percent and will adjust further downward depending on the severity of the cracking. Because of the unpredictable nature of the cracking, accumulation may lead to unsafe structural integrity and a potential catastrophic failure.

4. Units Impacted.

164 AW Memphis, TN

167 AW Martinsburg, WV

5. Contractor. TBD.

6. Cost. PEC: 0401119F

Units Required	Unit Cost	Program Cost
21 Crown Skin Replacements (3010)	\$9,400,000	\$197,400,000
Total		\$197,400,000

C-5 AND C-17 REAL-TIME IN THE COCKPIT (RTIC) AND DATA LINK (DL)

1. Background. Current information-based dynamic battlespace environments require secure airborne data communications with other aircraft, Command and Control (C2) agencies, and ground-based forces. Data link and data transfer will provide aircrews the ability to report and receive battlespace information from monitoring C2 agencies such as position of other aircraft, weather, threat, mission events, mission status, task completion, resource status, etc. This increased situational awareness allows agencies the ability to track mission progress, facilitating rapid decisions and adjustments during mission execution. Additionally, near real-time aircrew reporting will enable information exchanges with global and theater Air Operations Centers and Mobility Air Force assets (to include those that are airborne), which will improve synchronization of supporting and supported forces.

2. Source of Need. Air Mobility Command C-17 Requirements & Planning Council, Jun 2011.

3. Impact If Not funded. Without data link and data transfer capability, aircrew flexibility and situational awareness will be inadequate to be fully effective in current and evolving mission environments. Critical battlespace information would not be available to aircrew members or to monitoring C2 agencies tasked with execution of the assigned missions. Additionally, the inability to rapidly transfer critical information will further hamper battlespace driven adjustment to mission requirement and has the potential for damage to the aircraft and/or loss of life.

4. Units Impacted.

105 AW Stewart, NY
164 AW Memphis, TN

167 AW Martinsburg, WV

172 AW Jackson, MS

5. Contractor. TBD.

6. Cost. PEC: (C-5) 0401119F (C-17) 0401130F

Units Required	Unit Cost	Program Cost
C-5 NRE (3600)	N/A	\$4,000,000
C-17 NRE (3600)	N/A	\$4,000,000
21 C-5 Group A (3010)	\$100,000	\$2,100,000
21 C-5 TDL Radios (3010)	\$330,000	\$6,930,000
21 C-5 TDL Processors (3010)	\$100,000	\$2,100,000
17 C-17 Group A (3010)	\$100,000	\$1,700,000
17 C-17 TDL Radios (3010)	\$330,000	\$5,610,000
17 C-17 TDL Processors (3010)	\$100,000	\$1,700,000
Total		\$28,140,000

C-5 AND C-17 LARGE AIRCRAFT INFRARED COUNTERMEASURES (LAIRCM) AND NEXT GENERATION THREAT DETECTION SYSTEM

1. Background. Air National Guard (ANG) C-5s and C-17s operate worldwide in environments where Man-Portable Air Defense System (MANPADS) Infrared (IR) seeking missiles are widely available and represent a significant threat during take-off and landing. These missiles are extremely advanced and are designed to defeat flare-based defensive systems. Flares are also extremely volatile, require special handling, and supply is limited on the aircraft. The AN/AAQ-24 (V) LAIRCM system provides the most effective countermeasures against MANPADS that are increasingly sophisticated. C-5A aircraft are equipped with a flare-based Aircraft Defensive System (ADS). C-17s transferring to the ANG may not arrive with LAIRCM. LAIRCM and its sensors are a prerequisite to having the Next Generation Threat Detection System installed. An upgrade to the current AAR-54 missile launch detectors is available which would provide better IR threat detection, significantly increasing flare or LAIRCM effectiveness. The upgraded launch detect system must be capable of providing a 360 degree (azimuth and elevation) picture displayed at the navigator, loadmaster, and cockpit flight stations allowing crewmembers to see previously blind sectors and react accordingly.

2. Source of Need. LAIRCM Operational Requirements Document 314-92, Aug 98.

3. Impact If Not Funded. C-5s and C-17s currently operate in environments of increasing levels of threat complexity and lethality while employing less than state-of-the-art aircraft defensive systems. Operating in this configuration risks potential damage or loss of aircraft and ultimately the potential loss of life. Aircraft equipped with a threat detection system would greatly enhance the survivability rate while operating in high threat areas.

4. Units Impacted.

105 AW Stewart, NY
164 AW Memphis, TN

167 AW Martinsburg, WV

172 AW Jackson, MS

5. Contractors. Boeing, San Antonio, TX; Northrop Grumman, Rolling Meadows, IL.

6. Cost. PEC: (C-5) 0401119F (C-17) 0401130F

Units Required	Unit Cost	Program Cost
C-5 LAIRCM NRE (3600)	N/A	\$10,000,000
C-5 and C-17 Next Gen NRE (3600)	N/A	\$12,000,000
21 C-5 LAIRCM Group A Kits (3010)	\$4,500,000	\$94,500,000
21 C-5 LAIRCM Group B Kits (3010)	\$3,000,000	\$63,000,000
8 C-17 LAIRCM Group A Kits (3010)	\$2,100,000	\$16,800,000
8 C-17 LAIRCM Group B Kits (3010)	\$3,000,000	\$24,000,000
21 C-5 Next Gen Sensors (3010)	\$2,904,855	\$61,001,955
17 C-17 Next Gen Sensors (3010)	\$2,954,855	\$50,232,535
Total		\$331,534,490

C-17 CLASS III ELECTRONIC FLIGHT BAG (EFB)

1. Background. The definition of an EFB, according to the Federal Aviation Administration's (FAA) Advisory Circular (AC No. 120-76A), is "an electronic display system intended primarily for cockpit/flight deck or cabin use. EFB devices can display a variety of aviation data or perform basic calculations." In short, an EFB is an electronic information management device that helps to improve situational awareness, cockpit efficiency, productivity, and safety. They typically consist of a screen and a control unit that may be installed, mounted or contained in one sole portable unit. EFBs can electronically store and retrieve documents required for flight operations, such as Technical Orders, Air Force Instructions, Flight Operations Manual, Minimum Equipment Lists, as well as providing the most current Flight Information Publications (FLIP). Additional motivators for using an EFB are significant cost savings on annual paper FLIP purchases and the considerable reduction of paper waste associated with each FLIP changeover. The potential to receive significant mission changes during worldwide cargo and personnel transport missions is extremely high. The aircrew needs the ability to have all possible mission information and performance calculation capability at their fingertips. Although specified to be a Class III EFB at the Air Reserve Component Weapons and Tactics Conference, the Air Mobility Command (AMC) standard will most likely be a Class II solution (partially integrated/"read only") which is much more cost effective and is less intrusive on the aircraft and its systems.

2. Source of Need. C-17 AF Form 1067 with AMC tracking number 09-164.

3. Impact If Not Funded. Not funding the EFB might place the crew in a position where a single mission change could jeopardize mission success. Without the EFB, crews will continue to make critical decisions without accurate real-time information in the cockpit.

4. Units Impacted.

105 AW Stewart, NY 172 AW Jackson, MS

5. Contractor. Esterline CMC Electronics, Montreal, Canada; NavAero, Chicago, IL; IMS Flight Deck, Brea, CA; Boeing Commercial Airplane Company, Seattle, WA.

6. Cost. PEC: 0401130F

Units Required	Unit Cost	Program Cost
Non-Recurring Engineering (NRE) (3600)	N/A	\$2,400,000
17 C-17 Electronic Flight Bag (3010)	\$240,000	\$4,080,000
Total		\$6,480,000

C-5 BRAKE TEMPERATURE MONITORING SYSTEM (BTMS)

1. Background. Several recent incidents of brake fires have led to millions of dollars in damage to aircraft and disruption of flight operations. Aircrews have no real time data to alert them to an impending brake fire, and must rely on experience to determine when a brake temperature estimate should be accomplished. This temperature estimate on twenty-four different sets of brakes is manually accomplished by the Flight Engineer and can take as much as thirty minutes. It is during this time that crew actions taken such as crew egress and coordinating for ground fire support can significantly limit the potential for loss of life and/or assets. The installation of BTMS first requires the installation of an upgraded brake system. These brakes are planned to be utilized on the C-5M as they can accommodate heavier cargo loads. Currently, the C-5A fleet is not programmed to receive the new brakes, but will only receive them on an attrition basis.

2. Source of Need. AF 1067 with Air Mobility Command (AMC) tracking numbers 09-103 and 09-104 refer to upgrades to the brake system. BTMS is listed on AMC's R&PC Matrix.

3. Impact if not funded. The system would provide critical information that would impact an aircrew's course of action if heavy braking is encountered or after the discovery of a brake malfunction. This information would greatly enhance the crew's situational awareness and decrease reaction times, increasing the chances of preventing loss of life and/or assets.

4. Units Impacted.

164 AW Memphis, TN

167 AW Martinsburg, WV

5. Contractor. TBD.

6. Cost. PEC: 0401119F

Units Required	Unit Cost	Program Cost
Non-Recurring Engineering (NRE) (3600)	N/A	\$3,000,000
21 Upgraded Brake Systems (3010)	\$2,000,000	\$42,000,000
21 Brake Temperature Monitoring Systems (3010)	\$2,000,000	\$42,000,000
Total		\$87,000,000

C-17 RADAR WARNING RECEIVER (RWR)

1. Background. The Air National Guard (ANG) C-17 fleet has does not have a RWR. Modern RWRs feature digital receiver architectures, increased sensitivity and improved threat location accuracy. The only candidate RWR is the ALR-69A. Procuring a RWR is critical to support C-17 operations requirements.

2. Source of Need. AN/ALR-69A Capabilities Production Document approved by AFROC, 17 Nov 05.

3. Impact If Not Funded. C-5s and C-17s currently operate in environments of increasing levels of threat complexity and lethality while employing less than state-of-the-art aircraft defensive systems. Operating in this configuration risks potential damage or loss of aircraft and ultimately the potential loss of life. Aircraft equipped with a threat detection system would greatly enhance the survivability rate while operating in high threat areas.

4. Units Impacted.

105 AW Stewart, NY 172 AW Jackson, MS

5. Contractor. TBD.

6. Cost. **PEC: 0401130F**

Units Required	Unit Cost	Program Cost
NRE ALR-69A (3600)	N/A	\$10,000,000
17 ALR-69A (3010)	\$1,220,000	\$20,740,000
Total		\$30,740,000



C-130H/J & C-27J



- **Tactical Airlift**
- **ANG C-130 Units Provide 40% of the Total Fleet**
- **ANG C-27J Units Provide 100% of the Total Fleet**

C-130H/J: The C-130 Hercules is the U.S. military's primary combat delivery aircraft. In addition to its primary role in tactical airlift, ANG C-130s support humanitarian, peacekeeping, and disaster relief operations worldwide. The ANG will be the first to field equipment from the C-130 Avionics Modernization Program (AMP) and is the lead for operational test and evaluation. Procurement efforts continue for Real-Time Information in the Cockpit (SLOS/BLOS/ETOLD/EFB) capability, Large Aircraft Infrared Countermeasure (LAIRCM) system, improved armor, loadmaster crashworthy seat, precision guided airdrop capability, Night

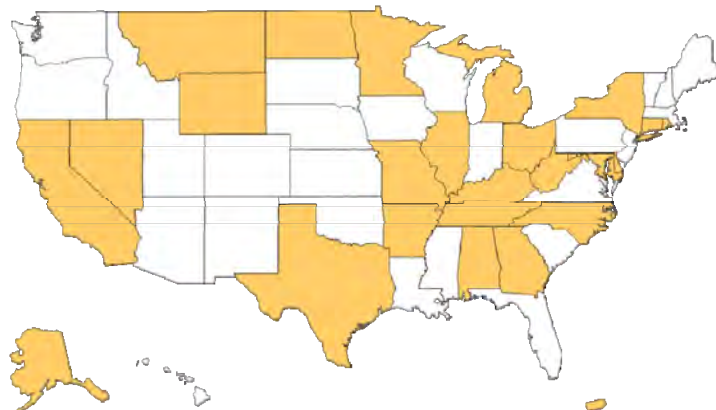
Vision Imaging System (NVIS) compatibility improvement, terrain Awareness, and increase firefighting safety. All these efforts will provide promise for enhanced capability.



C-27J: The C-27J supports operational and tactical priorities in the movement of time sensitive/mission critical equipment, supplies, and



personnel across “the last tactical mile”. It will complement the existing Air Force tactical airlift capability by adding a more efficient means to move small payloads, shorter distances, into remote and austere locations. Upcoming modernization efforts for the ANG C-27J fleet include loadmaster armor, enhanced situational awareness, Operation flight Program (OFP) software upgrades, mission customizable external sensor, and Heads-Up Display (HUD) / Primary Flight Display.



C-130H/J & C-27J

2011 Weapons and Tactics Conference

Critical Capabilities List

C-130H:

- Real-Time Information in the Cockpit (RTIC)
- Improved Self Protection
- Single Pass Precision Airdrop
- Night Vision Imaging System (NVIS) Compatibility Improvements
- Terrain Awareness Warning System

C-130J:

- Improved Self-Protection
- Increased Loadmaster Safety
- Single Pass Precision Airdrop
- Cargo Compartment Camera
- Increased Firefighting Safety

C-27J:

- Loadmaster Armor
- Enhanced Situational Awareness
- Operation Flight Program (OFP) Software Upgrades
- Mission Customizable External Sensor
- Heads-Up (HUD) / Primary Flight Display

Essential Capabilities List

C-130H:

- Propeller Modernization (EPCS, NP2000, IFPB)
- Crashworthy Seat
- Loadmaster Wireless Intercom
- Military Secure Precision GPS Coupled with Flight Management System (FMS)

C-130J:

- Improved Combat Delivery System (CDS)
- Gate Release Mechanism
- Loadmaster Wireless Intercom
- On Board Electronic Warfare (EW) Training
- Advanced Squadron Level Simulator

C-27J:

- Integrated Defensive Systems
- Flight Deck Electrical Outlets
- IFF Mode IV Upgrade
- Automatic Dependent Surveillance-Broadcast (ADS-B)
- Squadron Level High Fidelity Full Motion Simulator

Desired Capabilities List

C-130H:

- Distributed Mission Operations (DMO) H-2, H-3, and J Simulator
- Hearing Protection/Noise Cancellation
- Cargo Compartment Modernization

C-130J:

- Mission Recording Capability

C-27J:

- Combat Track II
- Self-Contained Encapsulated Latrine
- Ready to Install Spare Engine
- Dynamic Propeller Balancing Capability
- Off-Wing Organizational Propeller Repair Capability

C-130H/J & C-27J EXECUTIVE SUMMARY

Modernization Priority Profiles (\$ Million)

Program	2013	2014	2015
C-130H			
C-130H Real Time Information in the Cockpit	\$16.00 ²	\$14.00 ²	\$14.00 ²
C-130H Advanced LAIRCM /Missile Warning System with Hostile Fire Indicator	\$27.45 ²	\$27.45 ²	\$27.45 ²
C-130H Single Pass Precision Guided Airdrop	\$9.00 ³	\$27.72 ²	\$27.72 ²
C-130H Night Vision Imaging System (NVIS) Improvement	\$1.00 ²	\$3.38 ²	\$3.37 ²
C-130H Advanced Radar Warning Receiver (RWR)	\$17.08 ² \$25.00 ³	\$17.08 ² \$25.00 ³	\$28.86 ² -
C-130H Armor	\$6.52 ²	\$6.52 ²	\$6.52 ²
C-130H Terrain Awareness Warning System	\$5.46 ² \$2.00 ³	\$5.47 ² -	\$5.47 ² -
C-130J			
C-130J Advanced LAIRCM / Missile Warning System with Hostile Fire Indicator	\$30.73 ²	\$30.73 ²	\$15.31 ²
C-130J Loadmaster Crashworthy Seat	\$4.56 ²	\$4.56 ²	\$4.56 ²
C-130J Single Pass Precision Airdrop	\$1.75 ² \$0.72 ³	\$2.00 ² -	\$2.00 ² -
C-130J High Pressure Portable Oxygen Bottle	\$0.12 ²	-	-
C-130J Cargo Compartment Camera	\$3.15 ² \$2.00 ³	\$3.15 ² -	- -
C-130J Increased Firefighting Safety	\$0.45 ²	-	-
C-27J			
C-27J Loadmaster Armor	- \$2.00 ³	\$1.44 ² -	- -
C-27J Enhanced Situational Awareness Display	\$2.47 ²	\$1.47 ²	-
C-27J Operational Flight Program Software Upgrade	\$1.00 ²	-	-
C-27J Certified Head Up Display (HUD) /Primary Flight Display (PFD)	\$3.02 ²	-	-

Notes: ¹ 3840 Appropriation ² 3010 Appropriation ³ 3600 Appropriation ⁴ 3080 Appropriation

C-130H

- C-130H Real Time Information in the Cockpit - Provides real-time information to aircrews and increases survivability in combat operations.
- C-130H Advanced Large Aircraft Infrared Countermeasures (LAIRCM) /Missile Warning System with Hostile Fire Indicator - Allows aircraft to survive in an environment of complex threats and lethality. Enhances existing missile warning system to provide operationally acceptable probabilities of detection and false alarms to include a Hostile Fire Indication capability.
- C-130H/J Single Pass Precision Guided Airdrop - Eliminates multiple passes for wind sonde data during airdrops decreasing risk to aircrew while meeting U.S. Army requirements.

- C-130H Night Vision Imaging System (NVIS) Improvement - Allows for wide-angle view from the 3 o'clock to 9 o'clock continuum behind the aircraft.
- C-130H Advanced Radar Warning Receiver (RWR) - Provides advanced, digital RWR capable of ensuring adequate defensive situational awareness against present/future threats.
- C-130H Armor - Increases protection of the aircrew and sensitive areas of the aircraft to new requirement protection levels of 7.62mm/.30 cal armor piercing and .50 cal ball protection. Note: See the Armor information paper found in the C-27J section.
- C-130H Terrain Awareness Warning System - Provides aircrews increased situational terrain clearance awareness by displaying terrain data and terrain clearance information in relation to the aircraft's position and flight path based on the DTED loaded on the aircraft.

C-130J

- C-130J Advanced Large Aircraft Infrared Countermeasures (LAIRCM) /Missile Warning System with Hostile Fire Indicator - Allows aircraft to survive in an environment of complex threats and lethality. Enhances existing missile warning system to provide operationally acceptable probabilities of detection and false alarms to include a Hostile Fire Indication capability. Note: See the LAIRCM information paper found in the C-130H section.
- C-130H/J Loadmaster Crashworthy Seat - Provides the Loadmaster with a crashworthy seat able to withstand excessive impact or wheels up landing forces.
- C-130J - Single Pass Precision Airdrop - Eliminates multiple passes for wind sonde data during airdrops decreasing risk while meeting US Army requirements. Note: See the Single Pass Precision Airdrop information paper found in the C-130H section.
- C-130J High Pressure Portable Oxygen Bottle - Allows loadmasters greater mobility within cargo compartment during airdrops and decreases need for re-connection to aircraft oxygen.
- C-130J Cargo Compartment Camera - Provides monitoring from cargo compartment and flight deck during parachute deployments, condition of extraction parachutes, cargo pallet extraction, as well as personnel movement within the cargo compartment.
- C-130J Increased Firefighting Safety - Provides aircrew the ability to silence an audible landing gear warning while performing aerial firefighting.

C-27J

- C-27J Loadmaster Armor - Provide increased safety for the loadmaster against small arms fire likely to be encountered during critical phases of flight in close proximity to the ground.
- C-27J Enhanced Situational Awareness Displays - Provides integrated digital map display with moving map data by displaying real time mission changes to the crew. Additionally, Terrain Awareness and Warning System data capability is displayed along the route of flight reducing the potential for Controlled Flight into Terrain accidents.
- C-27J Operational Flight Program (OFP) Software Upgrades - Allows CNI-SP Parachute Ballistics Data updates to increase C-27J airdrop accuracy, and upgraded Mission Computer digital performance data will result in lower aircrew workload thus reduces error potential.
- C-27J Head-up Display (HUD)/Primary Flight Display (PFD) - New HUD will align the eye movement box with the C-27J cockpit design eye point allowing pilots to sit at the proper height in the cockpit and view all HUD symbology without any control yoke interference.

C-130H REAL-TIME INFORMATION IN THE COCKPIT

1. Background. Recent combat operations highlighted the need for comprehensive, networked Command and Control (C2) throughout all theaters of operation. Installation of a Tactical Data Link (TDL) provides this C2 link and maximizes C-130 aircrew situational awareness with Beyond-Line-of-Sight (BLOS) and Line-of-Sight (LOS) capabilities. It provides critical real-time information to C-130 aircrews so they can participate in the present day network-centric battle space and greatly increase survivability in combat operations. The resulting connectivity with C2 elements enhances the situational awareness of C-130 tactical aircraft including involved in theater operations. A TDL capability should be compatible with any situational awareness Cockpit Display Units utilized by the community. Additionally, integrating Electronic Take-off and Landing Data (ETOLD) and an Electronic Flight Bag (EFB) into the system will greatly increase aircrew's ability to execute missions in complex and dynamic battlespace. ETOLD automates tasks which currently require manual calculations and aircrew action. EFB presents Flight Information Publications FLIP and other flight information to the aircrew in a digital format relieving the need for multiple paper products.

2. Source of Need. MAF Network Enabling Concept, 26 Apr 06; AMC MAF Data Link Integration Technical Requirements Document (TRD), 25 Oct 06; Tactical Data link Transformation CDD, Increment 1, JROCM, 23 Jun 04; AMC R&PC Mission Essential 07/08.

3. Impact If Not Funded. Without a TDL, ANG C-130 assets will remain outside the C2 networks in theaters of operation. Crews will not be able to access critical real-time information available to the warfighter resulting in less effective mission performance.

4. Units Impacted.

109 AW Schenectady, NY	143 AW Quonset State, RI	165 AW Savannah, GA
123 AW Louisville, KY	145 AW Charlotte, NC	166 AW Wilmington, DE
130 AW Charleston, WV	146 AW Channel Island, CA	176 AW JB Elmendorf, AK
133 AW Minneapolis-St Paul, MN	152 AW Reno, NV	182 AW Peoria, IL
136 AW Ft Worth, TX	153 AW Cheyenne, WY	189 AW Little Rock AFB, AR
139 AW St Joseph, MO	156 AW San Juan, PR	

5. Contractors. Northrop Grumman, San Diego, CA.

6. Cost. PEC: (C-130H) 0401115 (C-130J) 0401134

Units Required	Unit Cost	Program Cost
118 RTIC Systems (3010)	\$500,000	\$59,000,000
Total		\$59,000,000

C-130H/J ADVANCED LARGE AIRCRAFT INFRARED COUNTERMEASURES / MISSILE APPROACH WARNING SYSTEM WITH HOSTILE FIRE INDICATOR

1. Background. Air National Guard (ANG) C-130H/J's operate worldwide in a low to medium threat environment where Man-Portable Air Defense System (MANPADS) infrared-seeking missiles are widely available. Additionally, tactical airlift mission profiles increases the exposure to this threat. The ANG requires an advanced IRCM system, like the AN/AAQ-24 Large Aircraft Infrared Counter Measures (LAIRCM) system, that provides the best countermeasures against MANPADS and does not rely on pyrotechnic expendables. The infrared seekers on more advanced missiles are resistant to pyrotechnic expendables. The next generation LAIRCM system is two Guardian Laser Transmitter Assemblies (GLTA), five next generation Ultra-Violet (UV) sensors, one processor and one Control Indicator Unit (CIU) that would provide greater warning and reduced false alarm rates. The missile warning system (MWS)/Hostile Fire Indicator (HFI) works in conjunction with pyrotechnic expendables and/or laser based countermeasures to decoy or destroy an infra-red guided surface-to-air missile and alert the crew to hostile fire. A more advanced MWS is required for the C-130 to provide operationally acceptable probabilities of detection and false alarms.

2. Source of Need. Air Mobility Command (AMC) ANNEX 314-92 to LAIRCM ORD; Navy AAR-47 ORD; WEPTAC Critical Requirement 2011; lessons learned Operation ENDURING FREEDOM and IRAQI FREEDOM (OEF/OIF).

3. Impact If Not Funded. The C-130 routinely operates in threat areas where there is a higher potential loss of aircraft and crew. Systems that do not meet acceptable rates of detection will result in either denied areas or loss of aircrew or equipment.

4. Units Impacted.

109 AW Schenectady, NY	143 AW Quonset State, RI	165 AW Savannah, GA
123 AW Louisville, KY	145 AW Charlotte, NC	166 AW Wilmington, DE
130 AW Charleston, WV	146 AW Channel Islands, CA	176 AW JB Elmendorf, AK
136 AW Fort Worth, TX	152 AW Reno, NV	182 AW Peoria, IL
139 AW St Joseph, MO	153 AW Cheyenne, WY	189 AW Little Rock AFB, AR

5. Contractors. Northrop Grumman Electronics Systems, Rolling Meadows, IL; BAE Systems, Nashua, NH; Lockheed Martin, Crestview, FL.

6. Cost. PEC: (C-130H) 401115F (C-130J) 401132F

Units Required	Unit Cost	Program Cost
18 C-130J Group A Kits (3010)	\$970,000	\$17,460,000
10 C-130J Group B Kits (3010)	\$4,400,000	\$44,000,000
153 NexGen Group A Kits (3010) (135 C-130H, 18 C-130J)	\$420,000	\$64,260,000
78 NexGen Group B Kits (3010) (68 C-130H, 10 C-130J)	\$774,855	\$60,438,690
Total		\$186,158,690

C-130H/J SINGLE PASS PRECISION GUIDED AIRDROP

1. Background. The Air National Guard (ANG) C-130 fleet has several shortfalls in its ability to precisely deliver airdrop loads. In current high threat operations, there is a requirement for airdrop accuracy to within 50 meters because of the difficulty in securing and defending larger drop zones, however, traditional methods only provide accuracy to a 300 meter range at altitudes higher than 3000' AGL. Joint Precision Airdrop System Mission Planning Software (JPADS-MP) and Improved Container Delivery System (ICDS) requires multiple passes over the drop zone for wind sonde deployment and atmospheric calculations. GPS guided "Firefly" chutes do not need multiple passes, but are only accurate to 150 meters. The existing APN-241 radar can be equipped with ballistic wind sensing and Synthetic Aperture Radar capabilities through upgrades, which provides more accurate data for ICDS drops. Adding targeting pods and Smart Multifunction Color Displays (SMFCD) aids in precisely locating drop zones, calculating appropriate Computed Air Release Points, and assessing airdrop effectiveness in real-time. Without the upgrade, C-130s must continue to conduct airdrops from altitudes as low as 300' AGL to achieve the required accuracy.

2. Source of Need. Mission Need Statement AMC/CAF/AETC/AFSOC/AFMC 301-97. C-130 Avionics Modernization Program (AMP) System Requirement Document, 31 Mar 00.

3. Impact If Not Funded. Without improved precision guidance capabilities, C-130s will not be able to airdrop within 50 meters from safe drop altitudes in accordance with Army requirements.

4. Units Impacted.

109 AW Schenectady, NY	143 AW Quonset State, RI	165 AW Savannah, GA
123 AW Louisville, KY	145 AW Charlotte, NC	166 AW Wilmington, DE
130 AW Charleston, WV	146 AW Channel Island, CA	176 AW JB Elmendorf, AK
133 AW Minneapolis-St Paul, MN	152 AW Reno, NV	182 AW Peoria, IL
136 AW Ft Worth, TX	153 AW Cheyenne, WY	189 AW Little Rock AFB, AR
139 AW St Joseph, MO	156 AW San Juan, PR	

5. Contractor. Northrop Grumman, Rolling Meadows, IL (APN-241, TGP). Lockheed Martin Missile and Fire Control, Orlando, FL (TGP).

6. Cost. PEC: (C-130H) 041115 (C-130J) 0401134

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$6,000,000
APN-241 Radar Upgrade (3010)	N/A	\$3,000,000
77 Laser Designator Pod (3010)	\$1,700,000	\$130,900,000
77 SMFCD (3010)	\$35,000	\$2,695,000
Total		\$142,595,000

C-130H NIGHT VISION IMAGING SYSTEM IMPROVEMENT

1. Background. Currently C-130H2/2.5 aircraft have an Night Vision Imaging System (NVIS) wiring harness that was intended to be a temporary fix until the Avionics Modernization Program (AMP) is installed. It was never intended as a 100% solution. Due to increased night vision goggles (NVG) requirements and operational necessities this solution is no longer valid and aircrews require a better solution until AMP. Modifications have been made reducing the size of the harness, but there are critical instruments that are back lit with non-compatible lighting. These instruments must be turned down. Turning down the back lit instruments also turns down several already-NVIS-modified instruments, making them unreadable. Even with the current NVIS harness the lighting still does not meet AFI 11-2C130 V3 requirement for NVIS compatible lighting for air landing operations, nor does this configuration meet MIL-STD-3009. Due to this situation, aircrews are forced to overcome the lack of lighting on primary instruments disregarding AFIs to perform safe operations while degrading the NVG capability. AFIs state training requirements that air landing operations will be accomplished in local training. Failure to modify C-130 Aircraft with NVG compatible aircraft lighting renders combat airlift incapable of meeting user demands to operate at night in a tactical environment.

2. Source of Need. Critical capability shortfall identified at the 2011 ARC WEPTAC.

3. Impact If Not Funded. Failure to modify C-130 aircraft with NVG compatible aircraft lighting renders combat airlift incapable of meeting user demands to operate at night in a tactical environment. The incompatible light that exists reduces the effectiveness of the NVGs and may lead to insufficient visual acuity for terrain avoidance. The reduced lighting provided by the harness also increases crew fatigue. The harness system inhibits full view of the instrument, in some cases, increasing the chance of misinterpretation of information provided. These two issues may be factors in future accidents

4. Units Impacted.

109 AW	Schenectady, NY	139 AW	St Joseph, MO	165 AW	Savannah, GA
123 AW	Louisville, KY	145 AW	Charlotte, NC	166 AW	Wilmington, DE
130 AW	Charleston, WV	152 AW	Reno, NV	176 WG	JB Elmendorf, AK
133 AW	Minneapolis-St Paul, MN	153 AW	Cheyenne, WY	182 AW	Peoria, IL
136 AW	Ft Worth, TX	156 AW	San Juan, PR	189 AW	Little Rock AFB, AR

5. Contractors. Patriot Taxiway Industries, Lomira, WI; Apache Enterprises, Inc., Grand Prairie, TX; Aero Dynamix, Inc., Euless, TX.

6. Cost. PEC: 401115F

Units Required	Unit Cost	Program Cost
NRE (3010)	N/A	\$1,000,000
135 C-130H NVIS Filter Kit (3010)	\$50,000	\$6,750,000
Total		\$7,750,000

C-130H/J ADVANCED RADAR WARNING RECEIVER

1. Background. The Air National Guard (ANG) C-130 fleet has several shortfalls with Radar Warning Receivers (RWR). First, not all C-130s have RWRs. C-130s that have RWRs are equipped with legacy ALR-69 RWR, except for the J-model which is equipped with the ALR-56M. The legacy ALR-69 provides threat radar warning indications to the aircrews; however, it has significant performance shortfalls, reliability and maintainability issues, and is not capable of ensuring adequate defensive situational awareness against some present and most future radar systems. The ALR-56M, while newer and more sensitive, lacks a digital receiver capability and therefore is not well positioned to address future threats. Modern RWRs feature digital receiver architectures, increased sensitivity and improved threat location accuracy. Replacing or upgrading the existing RWRs and procuring new RWRs for aircraft not currently equipped are critical to both reduce sustainment costs (commonality of all aircraft now having the same RWR system) and support C-130 operations requirements.

2. Source of Need. AN/ALR-69A CPD approved by AFROC, 17 Nov 05.

3. Impact If Not Funded. C-130s currently operate in environments of increasing levels of threat complexity and lethality while employing less than state-of-the-art aircraft defensive systems. Operating in this configuration risks potential damage or loss of aircraft and ultimately the potential loss of life. Aircraft equipped with a threat detection system would greatly enhance the survivability rate while operating in high threat areas.

4. Units Impacted.

109 AW Schenectady, NY	139 AW St Joseph, MO	165 AW Savannah, GA
123 AW Louisville, KY	145 AW Charlotte, NC	166 AW Wilmington, DE
130 AW Charleston, WV	152 AW Reno, NV	176 AW JB Elmendorf, AK
133 AW Minneapolis-St Paul MN	153 AW Cheyenne, WY	182 AW Peoria APT, IL
136 AW Fort Worth, TX	156 AW San Juan, PR	189 AW Little Rock AFB, AR

5. Contractor. TBD.

6. Cost. PEC: 401115F

Units Required	Unit Cost	Program Cost
72 ALR-69A (3010)	\$1,220,000	\$87,840,000
NRE ALR-69A (3600)	N/A	\$10,000,000
69 ALR-69 Upgraded RWRs (3010)	\$140,000	\$9,660,000
NRE ALR-69 Upgrade (3600)	N/A	\$31,590,000
31 ALR-56M Upgraded RWRs (3010)	\$380,000	\$11,780,000
NRE ALR-56M (3600)	N/A	\$50,000,000
Total		\$200,870,000

C-130H TERRAIN AWARENESS WARNING SYSTEM

1. Background. Aircrews need the capability to display terrain information and receive terrain warnings based on Digital Terrain Elevation Data (DTED). This will provide aircrews increased situational awareness concerning terrain clearance because it displays terrain data and terrain clearance information in relation to the aircraft's position and flight path. Aircrews are currently tasked to fly in demanding environments (night low level in mountainous terrain, airdrops & penetration descents to drop zone/landing zone/airfields in mountainous terrain) and against varying levels of threat systems. Aircrews need increased situational awareness concerning terrain data and a system which can provide terrain clearance information by analyzing aircraft flight path/parameters and terrain in front of the aircraft. This system will provide increased aircrew situational awareness through the display of terrain data and increased crew reaction to terrain conflicts. Current systems, such as Ground Collision Avoidance System (GCAS) and Ground Proximity Warning System (GPWS), only incorporate radar altimeter data with aircraft flight parameters to issue terrain collision warnings. They do not have a capability to display terrain data or essentially "look ahead" of the aircraft and issue terrain warnings based on aircraft flight path / parameters and the terrain in front of the aircraft.

2. Source of Need. Critical capability shortfall identified at the 2011 ARC WEPTAC; Air Mobility Command (AMC) C-130H Terrain Awareness Warning System (TAWS) 1067 T-2 Modification Proposal 19 Jul 2011.

3. Impact If Not Funded. An increased potential of Controlled Flight into Terrain (CFIT), degradation of airdrop accuracies and/or tactical/training mission failure due to loss of terrain situation awareness. High crew workload during fire fighting, night vision goggle (NVG) and Joint Precision Airdrop (JPAD) missions contribute to crew fatigue. Additionally, continued use of manual techniques requires high crew experience and significant training flight hours to maintain that experience.

4. Units Impacted.

109 AW	Schenectady, NY	139 AW	St Joseph, MO	165 AW	Savannah, GA
123 AW	Louisville, KY	145 AW	Charlotte, NC	166 AW	Wilmington, DE
130 AW	Charleston, WV	152 AW	Reno, NV	176 WG	JB Elmendorf, AK
133 AW	Minneapolis-St Paul, MN	153 AW	Cheyenne, WY	182 AW	Peoria, IL
136 AW	Ft Worth, TX	156 AW	San Juan, PR	189 AW	Little Rock AFB, AR

5. Contractors. Boeing, Longbeach, CA; Northrop Grumman Electronic Systems, Linthicum, MD.

6. Cost. PEC: 401115F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$2,000,000
VerSA Solution (3010)	N/A	\$16,400,000
Total		\$18,400,000

C/LC-130/H/J LOADMASTER CRASHWORTHY SEAT

1. Background. Air National Guard (ANG) C-130 aircraft do not have a designated loadmaster seat in the cargo compartment designed to withstand excessive impact or wheels-up landing forces. However, while carrying troops or passengers in the cargo compartment, the loadmaster is responsible for ensuring their safe and expeditious evacuation of the aircraft during emergency egress situations (i.e. wheels-up landing). During Operation IRAQI FREEDOM (OIF) and Operation ENDURING FREEDOM (OEF) loadmasters are directed to stand at the troop doors for up to 8 hours while performing scanning duties. Loadmasters don a strap restraint harness and take positions at the troop doors to scan the ground for Surface-to-Air Fire (SAFIRE). Due to the design, the restraint harness is only authorized during approaches and after departure, and not for use during takeoff and landing. Study of past Class A mishaps revealed that crewmembers seated in flight deck-designed seats were able to escape death compared to loadmasters who sat in cargo compartment nylon web seats with only a lap belt. Dedicated crashworthy seats in the cargo compartment will improve loadmaster safety.

2. Source of Need. Air Mobility Command (AMC) Validated AF Form 1067-04-065; Class A Mishap MC-130P 20020213FTEV016A SIB 2 Recommendation; Class A Mishap MC-130H 20020612FTEV033A Report, ORS 6; Critical capability shortfall identified at the 2012 ARC WEPTAC; AMC Requirements and Planning Council (R&PC) Mission Critical Item.

3. Impact If Not Funded. The Safety Investigation Board (SIB) for an MC-130P Class A mishap recommended development and procurement of a loadmaster crashworthy seat. The same recommendation was made for an MC-130H Class A mishap in the Other Recommendation of Significance section. If the loadmaster becomes incapacitated during the wheels-up landing or impact due to inadequate restraint, not only does the Air Force lose a valuable resource, but expeditious evacuation of troops or passengers is jeopardized.

4. Units Impacted.

109 AW	Schenectady, NY	143 AW	Quonset, RI	165 AW	Savannah, GA
123 AW	Louisville, KY	145 AW	Charlotte, NC	166 AW	Wilmington, DE
130 AW	Charleston, WV	146 AW	Channel Islands, CA	176 WG	JB Elmendorf, AK
133 AW	Minneapolis-St Paul, MN	152 AW	Reno, NV	182 AW	Peoria, IL
136 AW	Ft Worth, TX	153 AW	Cheyenne, WY	189 AW	Little Rock AFB, AR
139 AW	St Joseph, MO	156 AW	San Juan, PR		

5. Contractors. BAE Systems Support Solutions, Rockville, MD.

6. Cost. PEC: (C-130H) 401115F (C-130J) 401132F

Units Required *	Unit Cost	Program Cost
152 Loadmaster Kits (3010)	\$90,000	\$13,680,000
Total		\$13,680,000

* Two seats per kit.

C-130J HIGH PRESSURE PORTABLE OXYGEN BOTTLE

1. Background. C-130J loadmasters need a supplemental source of oxygen to support Joint Precision Airdrop System (JPADS) airdrops. Supplemental oxygen will provide improved mobility, longer duration over existing low-pressure walk-around bottles, and keep the oxygen regulator controls within arm's reach. The design must be compatible with users wearing a helmet and oxygen mask, body armor, and survival vest. The bottle will be used when the loadmaster is required to be mobile in the cargo compartment and use of a direct connection between the oxygen mask and regulator is not feasible. The existing walk-around bottles are designed to provide a maximum of 30 minutes of oxygen during periods of low exertion. In actual use, these bottles provide approximately five (5) minutes of useable oxygen during high altitude airdrop operations or periods of high exertion. As a result, loadmasters must stop performing in-flight mission duties to refill their walk-around bottle or use a 40 ft oxygen hose tethered to the aircraft. Due to the limited length of the hose, loadmasters must switch between using the aircraft and walk-around bottles to completely cover the C-130J cargo compartment.

2. Source of Need. Critical capability shortfall identified at the 2011 ARC WEPTAC; Air Mobility Command (AMC) Requirements and Planning Council (R&PC) Essential Item.

3. Impact If Not Funded. An increased likelihood of physiological incident resulting from oxygen loss due to switching oxygen sources or from pinching the oxygen supply hose.

4. Units Impacted.

143 AW Quonset State, RI

146 AW Channel Islands, CA

5. Contractors. AVOX, Lancaster, NY.

6. Cost. PEC: 401132F

Units Required	Unit Cost	Program Cost
20 kits (3010)	\$6,000	\$120,000
Total		\$120,000

C-130J CARGO COMPARTMENT CAMERA

1. Background. C-130J aircrews require the capability to monitor activity within the cargo compartment during heavy equipment airdrops and engine running on-load and off-load operations. This capability must permit operations within the cargo compartment to be monitored simultaneously both in the cargo compartment and on the flight deck. The capability must monitor parachute deployments, condition of extraction parachutes, cargo pallet extraction, as well as personnel movement within the cargo compartment. This solution, to include all sensors, controls, and displays, must be Night Vision Goggle (NVG) compatible. The existing C-130J crew complement does not permit using a primary crewmember to serve as a safety observer for operations within the cargo compartment during Engine Running On or Offload (ERO) operations. Safety observation is accomplished by the navigator in the C-130E/H aircraft and through the use of a pilot observation bubble on the C-17.

2. Source of Need. Critical capability shortfall identified at the 2011 ARC WEPTAC; Air Mobility Command (AMC) Requirements and Planning Council (R&PC) Essential Item.

3. Impact If Not Funded. During ERO operations, the possibility exists for the loadmaster to be injured and the situation not detected by the remaining crewmembers. This delay could prevent necessary and immediate medical attention and result in serious injury or even death. During airdrops of heavy equipment, monitoring the condition of the extraction parachutes and extraction sequence is critical to preventing damage to the aircraft, and maintaining safety within the cargo compartment and on the drop zone.

4. Units Impacted.

143 AW Quonset State, RI

146 AW Channel Islands, CA

5. Contractors. TBD.

6. Cost. PEC: 401132F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$2,000,000
18 Kits (3010)	\$350,000	\$6,300,000
Total		\$8,300,000

C-130J INCREASED FIREFIGHTING SAFETY

1. Background. C-130J pilots need to be able to silence an audible landing gear warning while performing aerial firefighting. The aerial firefighting flight profile requires maneuvering a maximum gross-weight aircraft to a drop altitude of 150 feet AGL, at a speed of just 120 knots. In order to maintain a safe margin between stall speed and retardant dispersal speed, 100% flaps are required. At flap settings greater than 70%, an audible “LANDING GEAR” warning is repeated, non-stop, until flaps are retracted below 70%. In normal flight conditions, the audible warning promotes safety by warning the flight crew to not land the aircraft with the gear up. While performing aerial firefighting, however, this audible warning produces a dangerous and annoying distraction which significantly reduces flight safety in an environment which is arguably one of the most risky environments C-130 aircraft and crews operate in. An automated method to disable/enable the audible landing gear warning and modified checklist procedures that properly ensure the warning will appropriately trigger in conditions other than aerial firefighting is necessary.

2. Source of Need. Critical capability shortfall identified at the 2011 ARC WEPTAC; Air Mobility Command (AMC) Requirements and Planning Council (R&PC) Mission Need Item.

3. Impact If Not Funded. A dangerous and annoying distraction to the flight crews that degrades situational awareness, increases risk, and reduces mission effectiveness. This compatibility, human factors and operational deficiency directly impacts operational effectiveness and suitability by distracting pilots from their focus on terrain, smoke plumes, other aircraft and retardant drop target. This is an unnecessary risk that can be mitigated by revising aircraft computer system software.

4. Unit Impacted.

146 AW Channel Islands, CA

5. Contractors. Lockheed Martin, Marietta, GA.

6. Cost. PEC: 401132F

Units Required	Unit Cost	Program Cost
NRE (3010)	N/A	\$150,000
OFP Upgrade (3010)	N/A	\$300,000
Total		\$450,000

C-27J LOADMASTER ARMOR / C-130H/J AIRCRAFT ARMOR

1. Background. Air National Guard (ANG) C-27J aircraft are not equipped with armor protection designated for the loadmaster in the observer position. During combat operations loadmasters are required to sit at the observer windows and scan the ground for Surface-to-Air Fire (SAFIRE). The C-27J's Direct Support mission providing Time Sensitive/Mission Critical airlift to Army forces at the "last tactical mile" will operate frequently in areas and at altitudes where the small arms threat is prevalent. Additionally, Current C-130 Armor is only capable of protecting the aircrew and sensitive areas of the aircraft against small arms (7.62mm/.30 cal) fire. The majority of Anti-Aircraft Artillery threats in areas where C-130's currently are required to fly are of a higher caliber weapon (12.7mm/.50 cal). Current armor is thus incapable of protecting the crew from the majority of threats. New armor being offered by civilian companies provides the required protection and appears to be lighter, easier to install, and requires less maintenance than current armor which will result in operational cost savings through weight reduction and reduce sustainment cost through ease of install and less maintenance.

2. Source of Need. Capability Development Document for the Joint Cargo Aircraft, Air Mobility Command (AMC) Requirements and Planning Council (R&PC) Critical Item; 2011 ARC WEPTAC Critical Capability.

3. Impact If Not Funded. Without loadmaster armor protection at the scanner windows, the loadmaster will be unprotected against the small arms threat which could result in serious injury and/or loss of life.

4. Units Impacted.

103 AW	Bradley, CT	136 AW	Ft Worth, TX	165 AW	Savannah, GA
109 AW	Schenectady, NY	139 AW	St Joseph, MO	166 AW	Wilmington, DE
110 AW	Battle Creek, MI	143 AW	Quonset State, RI	175 WG	Martin State, MD
119 WG	Fargo, ND	145 AW	Charlotte, NC	176 AW	JB Elmendorf, AK
120 FW	Great Falls, MT	146 AW	Channel Islands, CA	179 AW	Mansfield, OH
123 AW	Louisville, KY	152 AW	Reno, NV	182 AW	Peoria, IL
130 AW	Charleston, WV	153 AW	Cheyenne, WY	186 AW	Meridian, MS
133 AW	Minneapolis-St Paul, MN	156 AW	San Juan, PR	189 AW	Little Rock AFB, AR

5. Contractors. TBD.

6. Costs. PEC: (C-27J) 51138F (C-130H) 401115F (C-130J) 401132F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$2,000,000
36 C-27J Kits (3010)	\$40,000	\$1,440,000
139 C-130H/J A-Kits (3010)	\$40,000	\$5,560,000
70 C-130H/J B-Kits (3010)	\$200,000	\$14,000,000
Total		\$23,000,000

C-27J ENHANCED SITUATIONAL AWARENESS DISPLAYS

1. Background. Air National Guard (ANG) C-27J aircraft are not equipped with an integrated digital map system. The C-27J avionics suite is designed with an integrated digital map system to enhance mission accomplishment and reduce crew workload during two person flight deck operations. During the acquisition process, the US Army removed the integrated digital map system from the aircraft significantly reducing situational awareness and increasing cockpit workload. The C-27J Terrain Awareness and Warning System (TAWS) Terrain and Obstacle Display provides a graphic display of TAWS terrain and obstacle data providing a “look ahead” capability along the route of flight reducing the potential for Controlled flight Into Terrain (CFIT) accidents.

2. Source of Need. Capability Development Document for the Joint Cargo Aircraft, Air Mobility Command (AMC) Requirements and Planning Council (R&PC) Essential Item; Critical capability shortfall identified at the 2011 ARC WEPTAC.

3. Impact If Not Funded. Without the installation of an integrated digital map system, cockpit workload and “heads down” time is increased. “Heads down” time leads to reduced scanning outside the aircraft resulting in increased potential for mid air collisions and undetected threat engagements against the aircraft. Without a TAWS terrain and obstacle display in the C-27J, pilot situational awareness of high terrain and obstacles is reduced and the potential for CFIT accidents is increased.

4. Units Impacted.

103 AW	Bradley, CT	120 FW	Great Falls, MT	186 AW	Meridian, MS
110 AW	Battle Creek, MI	175 WG	Martin State, MD		
119 WG	Fargo, ND	179 AW	Mansfield, OH		

5. Contractors. Elbit Systems of America, Ft Worth, TX.

6. Costs. PEC: 51138F

Units Required *	Unit Cost	Program Cost
NRE (3010)	N/A	\$1,000,000
42 Digital Map System (3010)	\$70,000	\$2,940,000
Total		\$3,940,000

*Includes 10% spares.

C-27J OPERATIONAL FLIGHT PROGRAM (OFP) SOFTWARE UPGRADES

1. Background. Air National Guard (ANG) C-27J aircraft mission computers and system processors are programmed with out-of-date digital data used to compute aircraft Takeoff and Landing Data (TOLD) and airdrop parachute ballistics used to calculate the Computed Air Release Point (CARP). The C-27J mission requires tactical operations in and out of remote, austere, unprepared, and short runways where accurate aircraft performance data is critical for safe operations. The C-27J is the only mobility tactical airlifter with a two person flight deck that does not have certified mission computer TOLD.

2. Source of Need. Capability Development Document for the Joint Cargo Aircraft, Air Mobility Command (AMC) Requirements and Planning Council (R&PC) Essential Item; 2011 ARC WEPTAC Critical Capability.

3. Impact If Not Funded. Without accurate mission computer TOLD, aircrews are required manually calculate performance data from paper charts or use a laptop computer on the flight deck. These methods pose a high potential for error when calculating TOLD on the aircraft in the tactical environment, possibly leading to an aircraft mishap during takeoff, climb, or landing. Using current C-27J parachute ballistics data decreases airdrop accuracy and increase workarounds and crew workload during the mission planning process.

4. Units Impacted.

103 AW	Bradley, CT	120 FW	Great Falls, MT	186 AW	Meridian, MS
110 AW	Battle Creek, MI	175 WG	Martin State, MD		
119 WG	Fargo, ND	179 AW	Mansfield, OH		

5. Contractors. Alenia North America, Smyrna, GA.

6. Costs. PEC: 51138F

Units Required	Unit Cost	Program Cost
OFP Software Upgrade (3010)	N/A	\$1,000,000
Total		\$1,000,000

C-27J CERTIFIED HEADS UP DISPLAY (HUD) / PRIMARY FLIGHT DISPLAY (PFD)

1. Background. Engineering analysis of the C-27J Head-up Display (HUD) indicates that the HUD eye movement box is not collocated with the cockpit design eyepoint. Anthropometric studies have determined that a limited range of the pilot population can adjust the seat height and see all HUD symbology without excessive head movement and/or control yoke interference with the pilot's legs. HUD viewing and flight control interference is further aggravated when wearing aircrew protective equipment such as body armor and survival vests. Lowering the HUD approximately 2 inches will align the HUD eye movement box and the cockpit design eye point. Certifying the HUD as primary flight display will allow additional situational awareness information to be displayed on Head Down Displays (HDDs) 1 and 5, which are currently only reserved for primary flight displays.

2. Source of Need. Capability Development Document for the Joint Cargo Aircraft, Air Mobility Command (AMC) Requirements and Planning Council (R&PC) Essential Item; Critical Capability shortfall identified at the 2011 ARC WEPTAC.

3. Impact If Not Funded. If the HUD is not modified, the C-27J will not accommodate the full range of the pilot population (5% female - 95% male) to operate the aircraft while wearing protective equipment with interference with the control yoke. Additionally, pilots may be required to use excessive head movements to see all HUD symbology, resulting in degraded mission performance when operating in the tactical environment.

4. Units Impacted.

103 AW	Bradley, CT	120 FW	Great Falls, MT	186 AW	Meridian, MS
110 AW	Battle Creek, MI	175 WG	Martin State, MD		
119 WG	Fargo, ND	179 AW	Mansfield, OH		

5. Contractors. Rockwell Collins, Cedar Rapids, IA.

6. Costs. PEC: 51138F

Units Required	Unit Cost	Program Cost
NRE (3010)	N/A	\$1,000,000
42 HUD/PFD (3010)	\$48,000	\$2,016,000
Total		\$3,016,000



EC/HC/MC/LC-130



- **Commando Solo**
- **SOF/CSAR**
- **Special Mission (Airborne Firefighting, Antarctic Resupply)**
- **ANG Commando Solo's Provide 100% of the Total Fleet**
- **ANG CSAR H/MC-130s Units Provide 36% of the Total Fleet**
- **ANG LC-130s Provide 100% of the Total Fleet**

EC-130J: The EC-130J “Commando Solo” conducts information operations, psychological operations, and civil affairs broadcasts. Procurement efforts continue for Large Aircraft Infrared Countermeasure (LAIRCM) system, tactical data link (SLOS/BLOS) capability, radio

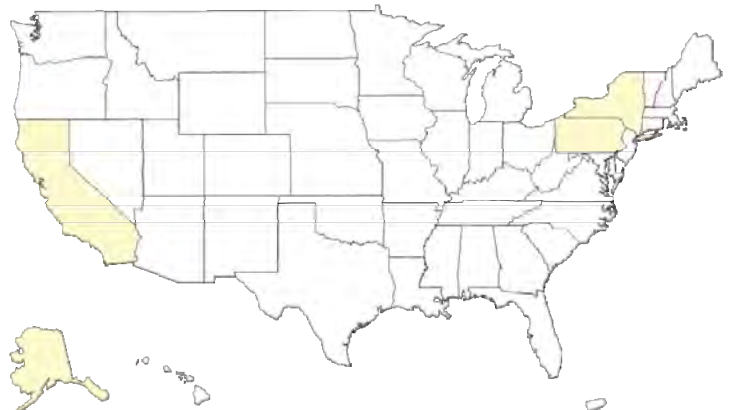


communication upgrades, loadmaster crashworthy seat, and external fuel tanks to increase aircraft range. All these efforts will provide promise for enhanced capability.



HC/MC-130: The ANG provides 35 percent of the Air Force's HC/MC-130 combat search and rescue capability. ANG HC/MC-130 units continue to deploy in support of overseas contingency operations and provide emergency rescue and relief support during domestic operations. Upcoming modernization efforts for the ANG HC/MC130 fleet include AN/ARS-6v12 LARS, multi-function color displays with data link, loadmaster crashworthy seats and oil cooler augmentation for better engine performance.

LC-130: Finally, the LC-130 operates on snowfields in remote areas of the Polar Regions in support of the National Science Foundation. Current modification efforts include a Crevasse Detection Radar, eight bladed propellers, and a new Jet Assisted Take-Off motor.



C-130 Special Mission 2011 Weapons and Tactics Conference

Critical Capabilities List

EC-130J:

- Large Aircraft Infrared Counter Measures (LAIRCM)
- Special Airborne Mission Installation and Response Arm/Pods
- Integrated Satellite Communication Radios
- Increased Aircraft Fuel Capacity
- Enhanced Situational Awareness System

HC-130P/N:

- Integrated BLOS / SLOS Datalink,
- EO/IR Sensor Upgrade with VDL
- Integrated ECM Suite with Hostile Fire Indicator and VECTS
- Combat Survivable Cargo Compartment
- Enhanced Engine and Propeller Performance

LC-130H:

- Eight Bladed Propeller Replacement
- Electronic Propeller Control System
- Special Airborne Mission Installation and Response (SABIR) and Crevasse Detection Radar (CDR)
- In-Flight Propeller Balancing (IFPB)
- Jet Assisted Take-Off (JATO) Program

Essential Capabilities List

EC-130J:

- Loadmaster Wireless Intercom

HC-130P/N:

- Combined High/Low Speed Air Refueling Capability
- CNS/ATM Compliant Avionics
- Synthetic Aperture and Ballistic Wind Sampling Radar Upgrade
- Digital Takeoff and Landing Data (TOLD)
- Gas Turbine Compressor (GTC) to Auxiliary Power Unit (APU) Upgrade

LC-130H:

- Engine Upgrade (3.5)
- Display Replacement and Upgrades
- Vortex Control Fins

Desired Capabilities List

HC-130P/N:

- Visual Threat Recognition and Avoidance Training (VTRAT)
- Radio Frequency Jammer
- Distributed Mission Operations (DMO) Weapon System Simulators
- Global Positioning System (GPS) Internal Repeater
- Terrain Following / Terrain Avoidance (TF/TA) Radar

C-130 SPECIAL MISSION EXECUTIVE SUMMARY

Modernization Priority Profiles (\$ Million)

Program	2013	2014	2015
EC-130J			
LAIRCM	-	\$4.85 ²	\$12.50 ²
Special Airborne Mission Installation and Response Arm/Pods	-	\$8.78 ²	-
Integrated Satellite Communication Radios	\$0.25 ² \$2.00 ³	-	-
Increased Aircraft Fuel Capacity	\$2.93 ²	-	-
Enhanced Situational Awareness System	\$4.50 ² \$1.00 ³	-	-
HC/MC-130P/N			
Integrated BLOS / SLOS Data Link	\$19.88 ² \$3.25 ³	-	-
EO/IR Sensor Upgrade with VDL	-	\$7.00 ² \$2.00 ³	7.00 ² -
Integrated ECM Suite with Hostile Fire Indicator and VECTS	-	\$3.75 ²	-
Combat Survivable Cargo Compartment	-	\$19.68 ²	-
Enhanced Engine and Propeller Performance	-	\$7.60 ²	\$11.71 ²
	\$5.0 ³	-	-
LC-130H			
Eight Bladed Propeller Replacement	\$18.00 ² \$5.00 ³	-	-
Electronic Propeller Control System	\$4.06 ²	-	-
SABIR and CDR	\$1.50 ²	-	-
In-flight Propeller Balancing	\$4.50 ²	-	-
Jet Assisted Takeoff Program	\$23.00 ² \$0.40 ³	-	-

Notes: ¹ 3840 Appropriation ² 3010 Appropriation ³ 3600 Appropriation ⁴ 3080 Appropriation

EC-130J

- Large Aircraft Infrared Counter Measures - Allows survival in a complex and lethal threat environment. All A kits are procured but not installed. Need all B kits to complete the program.
- Special Airborne Mission Installation and Response Arm/Pods- Articulating arm and fly away broadcast system designed to support Military Information Support Operations (MISO) broadcasting.
- Integrated Satellite Communication Radios- The ANG EC-130J aircraft currently do not have an integrated SATCOM system. Air Mobility Command (AMC) is the lead command for all basic C-130J airframes. AMC has proposed but not implemented a permanent SATCOM solution for airframes not currently equipped.

- Increased Aircraft Fuel Capacity - External fuel tanks will increase the range of the EC-130 aircraft and will allow them to loiter longer without tanker support. External fuel tanks will also increase Forward Area Refueling Procedure (FARP) capability.
- Enhanced Situational Awareness System - SAMS/ESA is the AFSOC standard situational awareness system to be installed on all of the commands airframes. The system is a computer network based communication and data link integration system.

HC/MC-130P/N

- Integrated BLOS/LOS Data Link - Networks the HC/MC-130 with other assets in theater enhancing Situational Awareness (SA) during Combat Search and Rescue Task Force (CSARTF) missions and reducing potential fratricide.
- Electro-Optical (EO)/Infrared (IR) Sensor Upgrade with VDL - Includes the ability to transmit and receive Full Motion Video (FMV) from EO/IR sensors, and Multi-Function Color displays.
- Integrated Electronic Counter Measures Suite with Hostile Fire Indicator and VECTS– An integrated defensive system that alerts the crew to small arms and rocket propelled grenade fire.
- Combat Survivable Cargo Compartment – Addresses safety issues and introduces standardization to the cargo and aircrew flight equipment compartment by utilizing crashworthy seats, palletized fuel tanks, wireless headsets and an Aircrew Flight Equipment (AFE) Rack.
- Enhanced Engine and Propeller Performance - The Oil Cooler Augmentation allows HC-130Ps to operate for extended periods on the ground without having to shut down engines due to excessive oil temperature. The Electronic Propulsion Control System (EPCS) and the 8 bladed props will dramatically increase efficiency, responsiveness and power availability. The In-flight Propeller Balancing (IFPB) will reduce maintenance and increase aircraft availability.

LC-130H

- Eight Bladed Propeller Replacement - Replaces the existing 4 bladed props with 8 bladed propellers that improve the takeoff performance of the aircraft.
- Electronic Propeller Control System - Incorporates a digital electronic propeller control system the replaces the existing mechanical propeller control systems.
- Special Airborne Mission Installation and Response (SABIR) and Crevasse Detection Radar (CDR) - Completes integration of radar capable of identifying crevasses/hazards on snowfields the LC-130 uses for deep field landing sites. The CDR is mounted on the aircraft using the SABIR articulating arm. Additional effort is required to establish the SABIR as a permanent modification in the LC-130 fleet.
- In-Flight Propeller Balancing - The In-flight Propeller Balancing System (IFPB) eliminates the need for regular maintenance. The propeller is continuously balanced at all times, virtually eliminating propeller balance induced vibration. This results in reduced noise, less damage from vibration, improves aircraft availability, and regularly scheduled maintenance is eliminated.
- Jet Assisted Takeoff Program - Funds production of new JATO motors.

EC-130J LARGE AIRCRAFT INFRARED COUNTERMEASURES (LAIRCM) SELF PROTECTIVE SUITE

1. Background. ANG EC-130s perform demanding missions worldwide in a low to medium threat environment of which shoulder-fired, Man-Portable Air Defense System (MANPADS) infrared-seeking missiles are widely available creating a significant threat during all phases of flight operations to include takeoff, landing, and mission operations. The ANG requires the AN/AAQ-24 LAIRCM system, which provides the best countermeasures against MANPAD threats and does not rely on pyrotechnic expendables. The Next Generation (NexGen) configuration, currently being fielded, is comprised of two Guardian Laser Transmitter Assemblies, five NexGen Ultra Violet sensors, one processor and one Control Indicator Unit that would provide greater warning, less false alarm rates, and higher reliability. Group A kits are being procured, but there is no AF funding for the Group B kits.

2. Source of Need. LAIRCM ORD 314-92, Aug 98. AFSOC Statement of Need, 001-91, Infrared Countermeasures Improvements.

3. Impact If Not Funded. The EC-130 operates in an increasingly complex and lethal threat environment. The aircrew and aircraft will be tasked to operate in this environment while employing a less than state-of-the-art aircraft defensive system, as well as the increased use of pyrotechnic expendables.

4. Unit Impacted.

193 SOW Harrisburg, PA

5. Contractor. Northrop Grumman Electronics Systems, Rolling Meadows, IL; BAE Systems, Nashua, NH; Lockheed Martin, Crestview, FL.

6. Cost. PEC: 401132F

Units Required*	Unit Cost	Program Cost
4 Group A Kits (3010)	\$1,212,500	\$4,850,000
4 Group B Kits w/ NEXGEN Sensors (3010)	\$3,125,000	\$12,500,000
Total		\$17,350,000

*Includes 10% spares.

EC-130J SPECIAL AIRBORNE MISSION INSTALLATION AND RESPONSE ARM/PODS

1. Background. Only three of the seven EC-130 aircraft are capable of performing the primary mission of Military Information Support Operations (MISO) broadcasting. Special Airborne Mission Installation and Response (SABIR) is a multi-purpose system capable of holding multiple pod mounted sensors, kinetic weapons, UAS control systems and/or antennae. This is a low cost solution to mounting systems on C-130 aircraft without the need for permanent modifications to either the airframe or power systems. Systems are designed to be installed in just 2 to 3 hours and use existing power ports, cargo floor and/or rails. Some systems are “palletized,” thus they can potentially be configured in the cargo compartment allowing for cargo or personnel delivery and subsequent employment of the system. The Loadmaster Crashworthy Seat is a device that allows a loadmaster to scan for threats out of the paratroop doors while operating in the low level environment. If the aircraft was to sustain damage from an enemy threat or experience Controlled Flight Into Terrain (CFIT) the loadmaster currently does not have a survivable crash seat putting crew members at extensive risk.

2. Source of Need. WEPTAC Critical Requirement 2011; Lessons Learned Operation ENDURING FREEDOM/Operation IRAQI FREEDOM (OEF/OIF).

3. Impact If Not Funded. Without this system, four EC-130s will be incapable of carrying out their primary mission of MISO broadcasting. The SABIR arm and pods are an integral part of providing a low cost, removable MISO and/or multi-mission capability on the aircraft.

4. Unit Impacted.

193 SOW Harrisburg, PA

5. Contractors. Airdyne Aerospace Inc., Calgary, Alberta.

6. Cost. PEC: 401132F

Units Required*	Unit Cost	Program Cost
7 Kits (3010)	\$1,245,714	\$8,719,998
1 Crashworthy Seat Kit (3010)	\$60,000	\$60,000
Total		\$8,779,998

*Includes 10% spares.

EC-130J INTEGRATED SATELLITE COMMUNICATION RADIOS

1. Background. ANG EC-130s perform missions in multiple Areas of Responsibility (AOR) where Satellite Communication (SATCOM) capability is mandatory. The ANG EC-130 aircraft currently do not have an integrated SATCOM system. Air Mobility Command (AMC) is the lead command for all basic C-130J airframes. AMC has proposed but not implemented a permanent SATCOM solution for airframes not currently equipped.

2. Source of Need. AFSOC 1067, USSOCOM Lessons Learned from OEF/OIF.

3. Impact If Not Funded. The EC-130s are tasked to operate in multiple AOR's for multiple users who require SATCOM communications. Failure by AMC to implement this solution reduces accessibility and readiness of EC-130 air frames to combatant commanders in the AOR.

4. Unit Impacted.

193 SOW Harrisburg, PA

5. Contractor. Rockwell Collins, Cedar Rapids, IA.

6. Cost. PEC: 401132F

Units Required *	Unit Cost	Program Cost
NRE (3600)	N/A	\$2,000,000
4 ARC-210 SATCOM radios (3010)	\$62,500	\$250,000
Total		\$2,250,000

* Includes 10% spares.

EC-130J INCREASED AIRCRAFT FUEL CAPACITY

1. Background. ANG EC-130s are tasked to perform missions in multiple Areas of Responsibility (AOR), on short notice. The ANG EC-130 aircraft currently do not have external fuel tanks, which increase range and endurance. Air to Air Refueling (AAR) is required on flights greater than 8 hours in duration, creating multiple scheduling and prioritization issues. Additionally, EC-130s recently added the requirement for Forward Area Refueling Point (FARP) operations to the Mission Essential Task Listing. With External Fuel tanks, EC-130 aircraft can operate up to 12 hours without AAR and tanker support as well as increase the number of receivers for FARP operations.

2. Source of Need. AFSOC 1067 & USSOCOM Lesson Learned.

3. Impact If Not Funded. The EC-130 operations will continue to be limited by their reliance on tanker support resulting in mission failure, mission delay, or decreased capability. Operations in the Pacific Air Force (PACAF) AOR and with the United States Special Operations Command have already been affected by a reliance on tanker support.

4. Unit Impacted.

193 SOW Harrisburg, PA

5. Contractor. Lockheed Martin, Crestview, FL.

6. Cost. PEC: 401132F

Units Required *	Unit Cost	Program Cost
8 External Tanks (3010)	\$365,625	\$2,925,000
Total		\$2,925,000

* Includes 10 % spares.

EC-130J ENHANCED SITUATIONAL AWARENESS SYSTEM

1. Background. Special Operations Forces Air Mission Suite/Enhanced Situational Awareness (SAMS/ESA) is the Air Force Special Operations Command (AFSOC) standard situational awareness system to be installed on all of the commands airframes. The system is a computer network based communication and data link integration system. It is made up of multiple line-of-sight and over-the-horizon radios, an electronic flight publication data base, software for in-flight planning and re-planning, secure internet, and live video reception and transmission all provided to the crew thru dedicated multifunction color displays (MFCDs).

2. Source of Need. AFSOC 1067, USSOCOM Lesson Learned & TERESA CDD.

3. Impact If Not Funded. Being the AFSOC standard data-link suite, integration of the EC-130 into AFSOC operations will be significantly reduced or eliminated. This fully integrated, low cost, stand alone system is critical for operating on the modern digital data field.

4. Unit Impacted.

193 SOW Harrisburg, PA

5. Contractor. TBD.

6. Cost. PEC: 401132F

Units Required *	Unit Cost	Program Cost
NRE (3600)	N/A	\$1,000,000
8 SAMS/ESA Systems (3010)	\$562,500	\$4,500,000
Total		\$5,500,000

* Includes 10% spares.

HC/MC-130P/N INTEGRATED BLOS/SLOS DATA LINK

1. Background. Installation of a Tactical Data Link (TDL) provides comprehensive Command and Control (C2) and maximizes H/MC-130 aircrew situational awareness with Beyond-Line-of-Sight (BLOS)/Secure-Line-of-Sight (SLOS) capabilities. It provides critical real-time data to aircrews so they can participate in the present day network-centric battle space. A TDL capability should be compatible with any situational awareness Cockpit Display Units utilized by the community. TDL capabilities need to be compatible with existing Task Force TDL technology. To comply with Personnel Recovery (PR) Doctrine the H/MC-130 needs to perform as an Airborne Mission Commander/Rescue Mission Commander and On Scene Commander. The community is unable to perform these roles effectively without a full picture of the battle space. Gateways are crucial today to allow different data links to communicate together. Currently the H/MC-130 cannot see PR forces on any data link much less other fighter and C2 data links. Today we still have aircraft that are unable to track and locate all survival radios in the Area of Responsibility and Continental United States during civil emergencies. New technology like the 406MHz beacon cannot be located on any H/MC-130. Even newer technology like Combat Survivor Evader Locator still cannot be located or tracked. This upgraded communication and avionics suite should be equipped with modern data loading capabilities such as the Digital Mapping Interface System.

2. Source of Need. MAF Network Enabling Concept, 26 Apr 06; AMC MAF Data Link Integration Technical Requirements Document (TRD), 25 Oct 06; Tactical Data link Transformation CDD, Increment 1, JROCM, 23 Jun 04; AMC R&PC Mission Essential 07/08; CAF MNS 316-92, Real time Information in the Cockpit (RTIC); Global Information Grid CRD, JROCM 134-01, 30 Aug 01; Air Force Tactical Data Link Master Plan; ARC 2011 WETPAC Critical Capability.

3. Impact If Not Funded. Without a tactical data link, ANG HC/MC-130 assets will remain outside the C2 networks in theatre. Crews will not be able to access critical real time data which will result in degraded mission performance and expose aircrews to unnecessary threats. Crews will remain unable to perform basic PR missions or requirements.

4. Units Impacted.

106 RQW Gabreski Field, NY 129 RQW Moffett Airfield, CA 176 WG JB Elmendorf, AK

5. Contractor. Rockwell Collins, Cedar Rapids, IA; Raytheon, Fullerton, CA; Cubic Corp., San Diego, CA.

6. Cost PEC: 27224F, 27230F

Units Required*	Unit Cost	Program Cost
NRE – HC/MC aircraft (3600)	N/A	\$3,250,000
13 Kits HC/MC aircraft (3010)	\$1,184,615	\$15,399,995
13 LARS V12 (3010)	\$323,077	\$4,200,001
13 DMIS (3010)	\$21,538	\$279,994
Total		\$23,129,990

*Includes 10% spares.

**HC/MC-130P/N ELECTRO OPTICAL/INFRARED (EO/IR)
SENSOR UPGRADE WITH VIDEO DATA LINK (VDL)**

1. Background. Rescues performed in combat and the aftermath of Hurricane Katrina highlighted the need to modernize the HC/MC-130 situational awareness capability. Real-time information exchange is paramount during personnel recovery operations requiring great precision and speed in asymmetric battle space environments. Recent technical advancements provide the means to integrate existing HC/MC-130 sensors with modern processors and data links facilitating superior Command and Control and tactical coordination from either an overhead or offset orbit. Having an integrated eye-safe laser range finder, illuminator and designator capability in a state of the art EO/IR sensor that can Find, Fix and Track (F2T) targets of interest, or to precisely mensurate survivor location information, takes the “search” out of “search and rescue” and provides the Combined Force Air Component Commander with a powerful collaboration tool in uncertain tactical environments. Equipping H/MC-130 aircraft with an enhanced EO/IR infrared sensor capable of Full Motion Video relieves reliance on high-demand Intelligence, Surveillance and Reconnaissance assets.

2. Source of Need. The Personnel Recovery (PR) Core Function Master Plan (CFMP). AMC, RMC and OSC duties as outlined in AFTTP 3-3.HC/MC-130. AMC R&PC Mission Essential 07/08; CAF MNS 316-92, Real time Information in the Cockpit (RTIC); Global Information Grid CRD; JROCM 134-01, 30 Aug 01.

3. Impact If Not Funded. The Combat Search and Rescue Task Force will have no precision marking for fixed or dynamic targets; and no F2T capability for cross cueing. Combat Search and Rescue is reliant on low-density, high demand weapons systems to provide these critical capabilities during recovery operations despite on-going tactical requirements of equal priority. Personnel Recovery Doctrine fulfillment capability will continue to be limited.

4. Units Impacted.

106 RQW Gabreski Field, NY 129 RQW Moffett Federal Airfield, CA 176 WG JB Elmendorf, AK

5. Contractor. Northrop Grumman, Rolling Meadows, IL.

6. Cost. PEC: 27224F, 27230F

Units Required *	Unit Cost	Program Cost
NRE (3600)	N/A	\$2,000,000
13 EO/IR Sensor Upgrades (3010)	\$1,076,923	\$13,999,999
Total		\$15,999,999

*Includes 10% spares.

HC/MC-130P/N INTEGRATED ELECTRONIC COUNTER MEASURE SUITE WITH HOSTILE FIRE INDICATOR AND VIRTUAL ELECTRONIC COMBAT TRAINING SYSTEM (VECTS)

1. Background. ANG HC/MC-130s operate worldwide in a low to medium threat environment where shoulder-fired Man-Portable Air Defense Systems are widely available and small arms threats are prolific. These threats are significant during take-offs, landings, airdrops, mission operations and low level navigation. In addition to traditional aircraft defensive systems designed to counter radar guided threats, a Missile Warning System, Hostile Fire Indicator as well as appropriate countermeasures are required. The ALQ-213 Electronic Combat integration system is required to integrate these Electronic Warfare systems, provide three dimensional audio, VECTS and provide all defensive information on one tactical display.

2. Source of Need. ARFC 1067; WEPTAC Critical Requirement 2011; Lessons Learned Operation ENDURING FREEDOM/Operation IRAQI FREEDOM (OEF/OIF).

3. Impact If Not Funded. The HC/MC-130 operates in environments of increasing levels of threat and lethality and therefore must have a robust self defense capability. Reaction time and survivability will continue to be an issue at low levels until an easier and standard system is used. Additionally, counter threat training will continue to suffer due to limited training systems.

4. Units Impacted.

106 RQW Gabreski Field, NY 129 RQW Moffett Federal Airfield, CA 176 WG JB Elmendorf, AK

5. Contractors. Northrop Grumman, Rolling Meadows IL; Terma North America, Inc., Arlington, VA; Gentex, Aurora, IL.

6. Cost. PEC: 27224F, 27230F

Units Required*	Unit Cost	Program Cost
ALQ-213 System NRE (3600)	N/A	\$2,000,000
Directional Audio (NRE) (3600)	N/A	\$6,000,000
13 ALQ-213 w 3D Audio kits(3010)	\$226,154	\$2,940,002
117 Group C Kits (3010)	\$6,947	\$812,799
3 Unit Test Equipment (3080)	\$58,400	\$175,200
HMCS NRE (3600)	N/A	\$5,100,000
13 HMCS Group A (3010)	\$323,077	\$4,200,001
39 HMCS Group C (3010)	\$154,359	\$6,020,001
13 Hostile Fire Indicator (3010)	\$269,230	\$3,499,990
Total		\$30,747,993

*Includes 10% spares.

HC/MC-130P/N COMBAT SURVIVABLE CARGO COMPARTMENT

1. Background. The H/MC-130 has recently been modified with the dual rail system which has increased the mission capability of the aircraft. The increased mission capability requires equipment that will create a more survivable cargo compartment to include an Aircrew Flight Equipment (AFE) Rack, Palletized Fuel Tank, Loadmaster Crashworthy Seats and Wireless communication. A standardized equipment rack must not interfere with a palletized fuel tank, Benson fuel tank or cargo onloading and offloading operations. Non-standard loading of rescue equipment and AFE create a potential safety hazard by having loose items in the cargo compartment. A palletized fuel tank compatible with the dual rails is necessary and will allow for more expeditious reconfiguration that will provide greater mission flexibility that is also capable of withstanding small arms fire and is equipped with fire retardant material creating a safer flight environment. Loadmasters are required to scan for enemy threats through the paratroop doors in a low level environment. If an aircraft was hit by a threat or experienced Controlled Flight Into Terrain the loadmasters currently do not have a survivable crash seat. Wireless interphone communication systems allow loadmasters to move freely about the cargo compartment and immediate area outside the aircraft for Joint Precision Airdrop System and Forward Area Refueling Point operations. The wireless interphone system will enhance safety by keeping the loadmaster plugged into communication systems and will improve visibility by enabling freedom of movement.

2. Source of Need. ARC 2011 WEPTAC Critical Requirement; Class A Mishap MC-130P 20020213FTEV016A SIB2 Recommendation, 20020612FTEV033A Report, ORS 6, fall 04/05/06/07.

3. Impact If Not Funded. Safety will continue to be compromised for crewmembers. Missions will be affected by limiting the amount of fuel that can be passed to customers as well as limiting the range of the H/MC-130.

4. Units Impacted.

106 RQW Gabreski Field, NY 129 RQW Moffett Federal Airfield, CA 176 WG JB Elmendorf, AK

5. Contractor. Airdyne, Calgary, Alberta; Telephonics, Farmingdale, NY; MBRC, Port Jefferson, NY; Mississippi Aerospace Corporation, Picayune, MS.

6. Cost. PEC: 27224F, 27230F

Units Required	Unit Cost	Program Cost
9 Dual Rail Fuel Tanks (3010)	\$1,888,889	\$17,000,001
13 Wireless Communication Systems (3010)	\$11,214	\$145,782
13 Aircrew Flight Equipment Storage Rack (3010)	\$5,384	\$69,992
26 Crashworthy Loadmaster Seats (3010)	\$94,807	\$2,464,982
Total		\$19,680,757

*Includes 10% spares.

HC/MC -130P/N ENHANCED ENGINE AND PROPELLER PERFORMANCE

1. Background. Currently the H/MC-130 aircraft is performance limited due to operating with heavy gross weights that result from carrying large amounts of fuel for Helicopter Air to Air Refueling and Forward Area Refueling Procedures (FARP), high outside air temperatures and high pressure altitudes creating a safety hazard for the aircrew. The H/MC-130 also operates in the low level environment (<500 feet) in mountainous terrain requiring enhanced engine performance in order to escape Controlled Flight Into Terrain incidents. Multiple aircraft upgrades are required to include the Electronic Propulsion Control System (EPCS), NP2000, Oil Cooler Augmentation (OCA), Inflight Propeller Balancing System (IFPBS) and Electronic Told (ETold). The EPCS enhances performance because of improved synchrophasing during ground operations and improved responsiveness from the controls (very little delay after making throttle adjustments). The NP2000 is an 8-bladed, composite propeller that significantly improves the thrust output of the current H/MC-130 engines during take-off. The OCA is critical for FARP operations in desert climate and humanitarian operations for the older H/MC-130Ps that have difficulty keeping engine oil from overheating in hot desert environments. The IFPBS eliminates the need for regular maintenance and results in reduced noise, less damage from vibration, improves aircraft availability, and regularly scheduled maintenance is eliminated. Electronic Take-off and Landing Data (ETold) is a method for electronically calculating engine performance data without the need of having a crewmember go into a paper regulation and extract the data from charts.

2. Source of Need. ACC Validated 1067, WEPTAC Critical Requirement 2011.

3. Impact if not funded. HC/MC-130 crews will continue to operate underpowered aircraft in the unforgiving low level environment. The HC/MC-130 fleet would not benefit from the reduced cost of maintenance and increased reliability.

4. Units Impacted.

106 RQW Gabreski Field, NY 129 RQW Moffett Federal Airfield, CA 176 WG JB Elmendorf, AK

5. Contractor. Hamilton-Sundstrand, Windsor Locks, CT; Lord Corporation, North Carolina.

6. Cost. PEC: 27224F, 27230F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$5,000,000
3 60/90kVA/Oil Cooler Augmentation (3010)	\$666,667	\$2,000,001
13 Synchrophaser (3010)	\$53,846	\$699,998
13 EPCS (3010)	\$823,846	\$10,709,998
EPCS TOs (3010)	\$1,000,000	\$1,000,000
13 IPBS (3010)	\$376,923	\$4,899,999
13 NP2000 (3010)	\$2,153,846	\$27,999,998
13 ETold (3010)	\$4,239	\$55,107
Total		\$52,365,101

Electronic Propeller Control System (EPCS) is pre-requisite component – replaces mechanical valve housing.

LC-130H EIGHT BLADED PROPELLER REPLACEMENT

1. Background. ANG LC-130s from Schenectady, NY have ski-equipped landing gear to enable landings and takeoffs on snow and ice. The current fleet consists of 6 Air Force owned and 4 National Science Foundation (NSF) owned aircraft. A significant portion of their mission requires landing on deep field runways and unimproved snow and ice. In order to ensure successful takeoff from deep field bases, the use of Jet Assisted Take-Off (JATO) rocket motors is required. Dwindling supplies of circa 1950 JATO motors will require funding replacements at a cost of more than \$8.0 million per year. The NP2000 is an 8-bladed, composite propeller that significantly improves the thrust (20%) of the current C-130 engines during take-off. An added benefit of the 8-bladed propeller is the availability of this additional power at any time during a mission and reduced vibration and shock during take-off and in flight.

2. Source of Need. ANG Validated 1067.

3. Impact if not funded. If a propulsion system upgrade for the LC-130 is not funded the AF's JATO supply will quickly disappear. The resulting loss of capability would seriously reduce future polar operations. Also, the fleet would not benefit from the reduced cost of maintenance and reduced mobility footprint, or experience the improved performance and reduced noise signature of the 8 bladed propellers.

4. Unit Impacted.

109 AW Schenectady, NY

5. Contractor. Hamilton-Sundstrand, Windsor Locks, CT.

6. Cost. PEC: 401115F

Units Required *	Unit Cost	Program Cost
NRE (3600)	N/A	\$5,000,000
NP2000** - 9*** aircraft (3010)	\$2,000,000	\$18,000,000
Total		\$23,000,000

* Includes 10% spares.

** Electronic Propeller Control System (EPCS) is pre-requisite component – replaces mechanical valve housing and its cost is not included in this estimate.

*** The unit has a total of 10 LC-130 aircraft, 6 ANG owned and 4 NSF owned but operated by the ANG. However, to support operational testing one of the ANG LC-130s is already equipped with the NP2000.

LC-130H ELECTRONIC PROPELLER CONTROL SYSTEM

1. Background. The Electronic Propeller Control System (EPCS) replaces current (1950s design) mechanical valve housings and synchrophaser (1970s) with modern Electronic Valve Housings and Electronic Propeller Controls. The EPCS enhances performance because of improved synchrophasing during ground operations and improved responsiveness from the controls (very little delay after making throttle adjustments). Pilots report instant response to throttle adjustments (verses delays experienced by the current systems) and noise and vibration generated from the current system due to inefficient synchrophasing is reduced by 400%. Also, the new system has a higher system reliability with a direct improvement to readiness and availability. This EPCS has an estimated Mean Time Between Failure (MTBF) rate increase to approximately 12,000 hours, or 8 times the MTBF of the current system. Parts count is reduced by 50% and the digital electronics won't wear out or need adjustment. The system has built in diagnostics and all adjustments are automatically completed. The EPCS also improves crew comfort and reduces maintenance actions (due to vibration damage). The Navy has already incorporated this system in the E-2 and C-2 aircraft and they have documented a 4% increase in mission completion due directly to the use of the EPCS.

2. Source of Need. Validated 1067, 09-003, dated 31 May 11.

3. Impact if not funded. If not funded the LC-130 aircraft would not benefit from the improved performance, increased mission availability, or reduced maintenance and operational costs of the EPCS. Also, the EPCS is a pre-requisite component for the eight-bladed propeller.

4. Unit Impacted.

109 AW Schenectady, NY

5. Contractor. Hamilton-Sundstrand, Windsor Locks, CT.

6. Cost. PEC: 401115F

Units Required *	Unit Cost	Program Cost
4 EPCS (3010)	\$765,000	\$3,060,000
EPCS TOs (3010)	\$1,000,000	\$1,000,000
Total		\$4,060,000

Includes 10% spares.

LC-130H SPECIAL AIRBORNE MISSION INSTALLATION AND RESPONSE AND CREVASSE DETECTION RADAR

1. Background. The New York Air National Guard (109th AW) has the responsibility for supporting the Air Force's only arctic environment capability. The 109th supports both Air Force polar operations and National Science Foundation (NSF) polar research missions using specialized, ski-equipped LC-130 aircraft. Over the last four decades, LC-130 aircraft have sustained serious damage while landing on unsurveyed ice and snow covered areas. Current methods to identify hazards with national imaging assets entail long lead times and increasing unreliability. The 109th had a need for crevasse detection radar that has additional capabilities including survivability enhancements, polar search and rescue, and airborne sensing. The ANG completed the evaluation and implementation of a Sandia Labs X-band radar that meets the requirement. The system is fielded but additional changes are required to improve the performance and operational capabilities of the system. Also, the Crevasse Detection Radar is mounted on the aircraft using the Special Airborne Mission Installation and Response (SABIR) articulating arm. Additional effort is required to establish the SABIR as a permanent modification in the LC-130 fleet.

2. Source of Need. CDR AF Form 1067 A4MY 07-007, dated 19 Nov 04 (CDR); SABIR AF Form 1067 A4MY 11-012, dated 15 Apr 11.

3. Impact if not funded. Although partially funded, additional funding is required for updating and supporting the radar and the SABIR arm. The lack of surveillance data would place the aircraft at a higher risk since they would still operate but at a significantly increased risk to aircraft and personnel.

4. Unit Impacted.

109 AW Schenectady, NY

5. Contractor. Airdyne, Calgary CAN; Sandia National Labs, Albuquerque, NM.

6. Cost. PEC: 401115F

Units Required	Unit Cost	Program Cost
CDR -Operational Improvements (3010)	N/A	\$500,000
SABIR - Permanent Modification (3010)	N/A	\$1,000,000
Total		\$1,500,000

LC-130H IN-FLIGHT PROPELLER BALANCING

1. Background. ANG LC-130Hs from Schenectady, NY have ski-equipped landing gear to enable landings and takeoffs on snow and ice. The current fleet consists of 6 Air Force owned and 4 National Science Foundation (NSF) owned aircraft. Their mission requires them to operate out of austere environments where there are no shelters and very little normal base infrastructure. A maintenance item that requires regular attention is the propeller balancing system. The current system balances the propellers but balance can change quickly and as a result, there is always additional vibration from the propeller balance. Regular servicing is required to keep the vibration within acceptable tolerances. This regular servicing is difficult to accomplish in a bare base situation and keeps the aircraft out of service for maintenance. The In-flight Propeller Balancing System (IFPB) eliminates the need for regular maintenance. The propeller is continuously balanced at all times, virtually eliminating propeller balance induced vibration. This results in reduced noise, less damage from vibration, improves aircraft availability, and regularly scheduled maintenance is eliminated.

2. Source of Need. ARC WEPTAC 2011 Critical Requirement.

3. Impact if not funded. If not funded the LC-130 aircraft would not benefit from the improved performance, increased mission availability, or reduced maintenance associated with the IFPB.

4. Units Impacted.

109 AW Schenectady, NY

5. Contractor. Lord Corporation, Cary, NC.

6. Cost. PEC: 401115F

Units Required	Unit Cost	Program Cost
IFPB - 10 LC-130 Aircraft (3010)	\$350,000	\$3,500,000
IFPB TOs (3010)	\$1,000,000	\$1,000,000
Total		\$4,500,000

LC-130H JET ASSISTED TAKE-OFF PROGRAM

1. Background. The New York Air National Guard (109th AW), provides 100% of the Air Force arctic environment requirements and the National Science Foundation's (NSF) polar research missions using specialized, ski-equipped LC-130 aircraft. The MK 6 Jet Assisted Take-Off (JATO) rocket motor enables ski equipped LC-130 operations in deep field locations. Currently, the LC-130 is using existing JATO bottles produced in the 1950s. It is critical that ANG procure replacement JATO motors as soon as practical. If the motors are not replaced, the LC-130 will eventually have to limit their deep field missions in the polar-regions. Indian Head Naval Surface Warfare Center has completed the development but there is no funding for qualification testing and there is no funding for production. Funding is required in FY12 to initiate production and ensure continued operational capability.

2. Source of Need. NGB ORD 002-03, dated 20 Feb 03.

3. Impact If Not Funded. The deficiencies described above, if not addressed, will result in the cancellation of deep field operations for the LC-130. This would include both the science and rescue missions. Alternate methods for transportation will have to be established and the loss of operational capability will need to be addressed.

4. Unit Impacted.

109 AW Schenectady, NY

5. Contractor. Indian Head NSWC, Indian Head, MD.

6. Cost. PEC: 401115F

Units Required	Unit Cost	Program Cost
Complete Qualification Program (3600)	N/A	\$400,000
1095 Replacement JATO Motors (3010)	\$21,000	\$22,995,000
Total		\$23,395,000

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E-8C JSTARS / C-32B GATEKEEPER



- **Advanced Wide-Area Airborne Battle Management**
- **Robust C2ISR Node for the Warfighter**
- **ANG E-8C JSTARS Unit Provides 100% of the Total Fleet**
- **ANG C-32B Unit Provides 100% of the Total Fleet**

E-8C: The E-8C is the world's most advanced wide-area airborne battle management aircraft that brings a unique combination of robust communication and real-time ground surveillance to both the air and ground battle spaces in true network centric warfare. The aircraft's unmatched wide area ground moving target indicator coverage detects and locates vehicles moving across land and water, in darkness and bad weather. Through continued investment in modernization, the E-8C will remain vital to joint force combat operations well into the 21st Century. The 116 ACW at Robins AFB, GA is home to 16 E-8Cs and the only E-8(T)C. The wing recently transitioned from a Total Force to an Active Associate wing. An unblemished combat record and continuous deployment in the combat theater, without relief since 2001, with over 77,000 combat hours and 7,000 sorties flown in support of irregular warfare in Iraq, Afghanistan, and Libya, stand testament to the success of the Total Force. The 116 ACW is manned by 1,297 active duty Air Force personnel, 127 active duty Army personnel, 760 full-time ANG personnel and 364 traditional ANG personnel. Modernization efforts are underway to enhance the war fighting capabilities of the E-8C through programs that include fielding the Communication/Network Upgrade; enhanced target identification utilizing Enhanced Land/Maritime Mode (ELMM) and cross-domain security solution to include multi-theater chat, e-mail, & web access. The E-8C recently performed a flight demonstration using Electro-Optical/Infra-Red (EO/IR) Sensors.



C-32B: The C-32B provides dedicated rapid response worldwide airlift to the Department of Defense, through the Commander, United States Special Operations Command, in support of the United States Government crisis response activities, both domestically and abroad. The 150th Special Operations Squadron of the New Jersey Air National Guard operates the C-32B from Joint Base McGuire-Dix-Lakehurst, NJ and is the only U.S Air Force C-32B.



E-8C and C-32B

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Critical Capabilities List

E-8C:

- Organic Combat Identification Capability For Targeting
- Interoperability with Commercial Software Programs
- Mission Radio Calibration Tool
- Integrated Broadcast System
- Multi-Agency Communication Capability

C-32B:

- Ku Bandwidth
- Communications Management System Replacement

Essential Capabilities List

E-8C:

- Engine Replacement
- Mission Voice/Video Recorder
- Self Defense Suite
- Common Data Link with Common Ground Station
- Personnel Recovery Compatible Interrogation Radio
- Wideband Communication

C-32B:

- Audio/Video (A/V) System Replacement

Desired Capabilities List

E-8C:

- Net Enabled Weapons
- Electronic Flightbags
- Tactical Datalink Interoperability/Multi-Tactical Data Link Gateway
- Enhanced Electronic Attack/Electronic Protect Capability
- 3D Spatial Audio

C-32B:

- None

E-8C / C-32B EXECUTIVE SUMMARY

Modernization Priority Profiles (\$ Million)

Program	2013	2014	2015
E-8C			
Organic Combat Identification Capability for Targeting	3.36 ³	\$8.62 ³	\$11.79 ³
Net Centric Collaborative Targeting	-	-	\$1.30 ²
MS-177 EO/IR Sensor	\$5.30 ³	\$14.92 ³	\$11.70 ³
	\$8.55 ³	\$35.98 ³	\$107.06 ³
Interoperability with Commercial Software	-	\$5.20 ²	-
	-	-	-
	\$0.50 ⁴	-	-
Mission Radio Calibration Tool	\$0.95 ²	-	-
Integrated Broadcast Service	\$22.16 ³	\$14.01 ³	\$8.98 ³
Multi-Agency Communication Capability	\$23.45 ²	-	-
C-32B			
Ku Bandwidth	\$14.00 ¹	\$14.00 ¹	\$14.00 ¹
	\$2.80 ²	-	-
Communication Management System	\$2.00 ²	\$2.00 ²	-

Notes: ¹ 3840 Appropriation ² 3010 Appropriation ³ 3600 Appropriation ⁴ 3080 Appropriation

E-8C

- Organic Combat Identification Capability for Targeting - Provides organic combat identification capability to allow multiple sensors on the aircraft to provide targeting quality identification to other forces.
- Interoperability with Commercial Software - Upgrades the operator workstation with commercial software products to resolve incompatibility issues with accessing combat planning documents generated by other organizations.
- Mission Radio Calibration Tool - Allows aircrew to calibrate multiband radio systems after performing in flight adjustments.
- Integrated Broadcast Service - Provides JSTARS intelligence reports of Electronic Intelligence (ELINT), Signals Intelligence (SIGINT) and Human Intelligence (HUMINT) for fusion with local sensor information in support of target nomination and identification.
- Multi-Agency Communication Capability - Provides ground Special Operations, Homeland Defense, law enforcement, and US Customs & Border Patrol agencies with enhanced access to Command Control Intelligence Surveillance Reconnaissance (C2ISR) resources through interoperability with the E-8C.

C-32B

- Ku Bandwidth - Provides a Ku transmit/receive capability currently fielded on similar aircraft.
- Communication Management System - Provides the operators means to control mission radios and user system access. The CMS is the mission communications “backbone”, without it no mission communications, voice or data, enters or leaves the aircraft.

E-8C ORGANIC COMBAT IDENTIFICATION CAPABILITY FOR TARGETING

1. Background. An on-board Combat Identification (CID) capability on the E-8C Joint Surveillance Target Attack Radar System (JSTARS) aircraft increases lethality of the weapons system by reducing the length of the sensor-to-shooter kill chain. This capability would enable an accurate characterization of detected objects in the joint battlespace and would provide decision quality data to the operator for the timely application of military options and weapons. There may not be a single solution to field this requirement. A Family-of-Systems approach may be used to find a balanced combination of sensors with the capability to collectively provide the identification information required to perform all mission area tasks. These systems may include Blue Force Tracker and any number of multi-spectral, electro-optical or infrared sensors that are cued by the radar and incorporate an aided target recognition upgrade to the current radar system.

2. Source of Need. JSTARS Operational Requirements Document (USAF 001-84) I/II/II A (Rev 5) (Dec 04) contains a requirement for CID.

3. Impact If Not Funded. Organic CID is absolutely critical to JSTARS' future warfighting capability. Without a CID capability JSTARS is unable to internally identify a target thereby requiring integration with additional ground or air assets to provide or confirm the identification. This delay can add minutes or even hours to the kill chain. Because JSTARS lacks an onboard CID capability its standoff capability is not utilized and additional personnel and equipment are placed in harm's way.

4. Units Impacted.

116 ACW Robins AFB, GA

5. Contractor. Northrop Grumman Corporation, Melbourne FL.

6. Cost. PEC: 27581F

Units Required	Unit Cost	Program Cost
Aided Target Recognition (ATR) Software Development (3600)	N/A	\$41,198,000
Net Centric Collaborative Targeting (NCCT) NRE (3600)	N/A	\$31,914,000
18 NCCT Kits (3010)	\$384,000	\$6,912,000
MS-177 EO/IR Sensor NRE (3600)	N/A	\$120,000,000
6 EO/IR Sensors (3010)	\$65,000,000	\$390,000,000
Total		\$590,024,000

E-8C INTEROPERABILITY WITH COMMERCIAL SOFTWARE PROGRAMS

1. Background. Due to the age of the Virtual Management System Software on E-8C Joint Surveillance Target Radar System (JSTARS), compatibility with commercially developed software and subsystems is extremely difficult at best, and not possible most of the time. Currently, combat planning documents, such as Air Tasking Orders, are built and disseminated using commercial software products readily available on common computers. Unfortunately, such products are not compatible with the JSTARS operator work stations (OWS) operating systems. Upgrading the aircraft OWS with commercial software products will significantly reduce the amount of time mission crews use to convert incompatible data files into usable products. It will also reduce the need to print products prior to flight. Additionally, an Electronic Flight Bag (EFB) will greatly enhance pilot/navigator situational awareness, improve effectiveness, and save valuable time in the case of an in-flight emergency by giving crews access to moving maps, electronic flight publications, and aircraft performance data.

2. Source of Need. JSTARS Operational Requirements Document (USAF 001-84) I/II/II A (Rev 5) (Dec 04)

3. Impact If Not Funded. The lack of interoperability with commercial software products drives very inefficient processes to convert mission data into usable formats. It also drives man-machine interface, increasing the risk of erroneous information during the execution of combat operations. Without EFBs, Flight Crews have suboptimal situational awareness, added weight of paper manuals, and additional planning time during in-flight emergencies.

4. Units Impacted.

116 ACW Robins AFB, GA

5. Contractor. Northrop Grumman Corporation, Melbourne, FL.

6. Cost. PEC: 27581F

Units Required	Unit Cost	Program Cost
18 Commercial Software Licenses (3080)	\$27,800	\$500,400
50 Electronic Flight Bags (3010)	\$15,000	\$750,000
18 Group A Mods (3010)	\$289,000	\$5,200,000
Total		\$6,452,400

E-8C MISSION RADIO CALIBRATION TOOL

1. Background. The E-8C Joint Surveillance Target Radar System (JSTARS) flight crew requires the capability for periodic evaluation and checkout of the aircraft's Ultra High Frequency (UHF) and Very High Frequency (VHF) radio systems. Currently, maintainers have no means of assuring optimum system performance in the event radio adjustments are required in flight. Northrop Grumman Field Service Engineering Report (FSER) 05-0130 provided a recommendation for periodic evaluation and checkout which includes testing and baselining transmit modulation, transmit power out, cable standing wave ratio, receive sensitivity, and receive squelch setting. The recommendation to accomplish the procedures identified in FSER 05-0130 should be formalized in JIMIS as a general aircraft maintenance procedure. These limiting factors lead to degradation of the aircraft radios and ultimately impact communication effectiveness during flight.

2. Source of Need. JSTARS Operational Requirements Document (USAF 001-84) I/II/II A (Rev 5) (Dec 04).

3. Impact If Not Funded. JSTARS is a Theater Air Control System tasked to orient shooters, pair shooters, solve problems, upchannel battlefield assessments and execute the kill chain as the counterland / countersea command and control asset supporting the warfighter on the ground. Without the ability to properly calibrate multiband radio systems after performing in flight adjustments, the communications system may experience inadvertent degradation that impede aerial communication and the aircraft's ability to provide tactical direction.

4. Units Impacted.

116 ACW Robins AFB, GA

5. Contractor. Northrop Grumman Corporation, Melbourne, FL.

6. Cost. PEC: 27581F

Units Required *	Unit Cost	Program Cost
6 Test Sets (3010)	\$75,000	\$450,000
T.O.s, Training Materials (3010) *	N/A	\$500,000
Total		\$950,000

*Includes 10% spares.

E-8C INTEGRATED BROADCAST SERVICE

1. Background. Integrated Broadcast Service (IBS) is the primary threat warning system to the Joint Surveillance Target Attack Radar System (JSTARS) and those interacting with JSTARS. Additionally, IBS also provides intelligence reports of Electronic Intelligence, Signals Intelligence and Human Intelligence for fusion with local sensor information in support of target nomination and identification. Production of Commander's Tactical Terminal/Hybrid, Receive Only (CTT/H-R) terminals that supply IBS information to users has ended with repair support ending in 2013. The system's internal components are no longer supplied through the commercial market with repairs taking 90-180 days. Furthermore, the CTT/H-R terminals cannot be modified to support new Common Message Format nor Common Interactive Broadcast waveform migration and its crypto requires replacement with a Crypto Modernization Program compliant device/algorithm. Air Force Tactical Receiver System-Ruggedized (AFTRS-R) terminals are fully capable of supporting IBS requirements and replacement of CTT/H-R terminals. AFTRS-R NSA certified Block II terminals are already readily available for JSTARS; however, these assets require integration and test with the aircraft.

2. Requirement. JSTARS Operational Requirements Document - Rev 5, Dec 04, paragraphs 4, 4.b., 4.b.1.

3. Impact If Not Funded. Without IBS Joint STARS will have no future threat warning capability which severely reduces the aircraft's survivability in hostile threat environments.

4. Units Impacted.

116 ACW Robins AFB, GA

5. Contractor. Northrop Grumman Corporation, Melbourne, FL.

6. Cost. PEC: 27581F

Units Required	Unit Cost	Program
AFTRS-R NRE (3600)	N/A	\$45,150,000
AFTRS-R NRE (3010)	N/A	\$22,350,000
Total		\$67,500,000

E-8C MULTI-AGENCY COMMUNICATION CAPABILITY (MACC)

1. Background. The E-8C Joint Surveillance Target Radar System (JSTARS) has a requirement to disseminate Command, Control, Intelligence, Surveillance, Reconnaissance (C2ISR) data to airborne and ground units to better execute combat operations in hostile environments. The overall objective of the MACC program is to provide ground Special Operations, special tactics teams, Homeland Defense, law enforcement, and US Customs & Border Patrol agencies with enhanced access to C2ISR resources through interoperability with the E-8C via secure voice and IP link. The MACC system allows the E-8C to provide ground special tactics teams with communication access to special operations elements that are located beyond line of sight and provides a communication gateway to other friendly forces via the Adaptive Networking Wideband Waveform and INMARSAT Swift Broadband service. The system also enables interoperability with government law enforcement and emergency response agencies because its architecture utilizes “Project 25” data modes with National Institute of Standards & Technology Type 3 encryption. With access to additional “friendly” positions, Air Battle Managers will gain increased awareness and control of the battlespace environment while also providing ground/special tactics forces and Homeland Defense agencies with unprecedented access to airborne C2ISR resources.

2. Source of Need. JSTARS Critical Requirements list (ARC 2011 WEPTAC), 116 ACW Capability Needs list (Line-of-Sight Wideband Communications and Airborne Connectivity with Coalition Forces).

3. Impact If Not Funded. Without this capability disadvantaged ground force units, law enforcement units and Homeland Defense agencies have little capability to coordinate tactical missions and have a higher risk of missed opportunities to locate, apprehend, or engage time sensitive targets.

4. Units Impacted.

116 ACW Robins AFB, GA

5. Contractor. Northrop Grumman Corporation, Melbourne FL.

6. Cost. PEC: 27581F

Units Required	Unit Cost	Program Cost
22 PRC-117G & CF-19 Toughbook (3010)	\$68,000	\$1,496,000
22 Group A kits (3010)	\$134,390	\$2,956,580
NRE (3010)	\$11,000,000	\$11,000,000
Training (3010)	\$800,000	\$800,000
18 Installation (3010)	\$400,000	\$7,200,000
Total		\$23,452,580

C-32B UPGRADED SATELLITE COMMUNICATION SYSTEM WITH SECURE KU BANDWIDTH

1. Background. The current system does not provide reliable, sufficient, secure, and dedicated bandwidth to meet the user requirements and it no longer meets the Operational Requirements Document (ORD) requirement. The current system relies on a commercially available service and therefore it competes for a finite amount of bandwidth against any and all other system users, both commercial and government. The legacy system at the time of installation was sufficient but since that time the service has been commercially proliferated to the point of system saturation requiring procurement of a new satellite communication system. Additionally, the DoD Chief Information Officer (CIO) recently declared this a “legacy” system and it must be replaced. A Ku transmit/receive capability exists and has been fielded on similar aircraft, however, in order to proceed with installation we must secure Ku bandwidth, an O&M bill. Procurement funding for the hardware and installation may be available in FY12 and beyond however without securing bandwidth funding we cannot proceed with acquisition and installation of the Ku transmit/receive hardware.

2. Source of Need. USAF/National Guard Bureau classified ORD NGB ORD 001-57 I/II/III dated 8 August 2002.

3. Impact If Not Funded. Without dedicated secure Ku bandwidth, user communications will continue to degrade due to commercial proliferation and system saturation, critical communications will not occur and may cause mission disruption or even failure. Lastly, the legacy system will require replacement within the next 5 years in accordance with the DoD CIO memorandum titled “Discontinuation of Legacy Inmarsat Services” dated 25 August 2011.

4. Unit Impacted.

150 SOS Joint Base McGuire, NJ

5. Contractors. Classified.

6. Cost. PEC: 1160408BB

Units Required	Unit Cost	Program Cost
5 year Ku Bandwidth (3840)	\$14,000,000	\$70,000,000
2 Satellite Communication Systems (3010)	\$1,400,000	\$2,800,000
Total		\$72,800,000

C-32B COMMUNICATIONS MANAGEMENT SYSTEM (CMS) REPLACEMENT

1. Background. The CMS is the mission communications “backbone.” Without it no mission communications, voice or data, enters or leaves the aircraft. It provides the operators means to control mission radios and user system access. The current system is nearly a decade old and multiple minor modifications have been made to keep it viable to date; it is within a few critical breakages of total system failure. It now must be completely replaced due to Diminishing Manufacturer Support Supply and obsolescence issues.

2. Source of Need. USAF/National Guard Bureau classified Operational Requirements Document (ORD) NGB ORD 001-57 I/II/III dated 8 August 2002.

3. Impact If Not Funded. The current system is outdated and unsustainable. A near-term component failure may cause mission degradation or mission failure.

4. Unit Impacted.

150 SOS Joint Base McGuire, NJ

5. Contractors. Classified.

6. Cost. PEC: 1160408BB

Units Required	Unit Cost	Program Cost
2 CMS Replacements (3010)	\$2,000,000	\$4,000,000
Total		\$4,000,000



F-15 & F-22



- **Air Dominance**
- **Homeland Defense**
- **ANG F-15 Units Provide 52% of the Total Fleet**
- **ANG F-22 Units Provide 11% of the Total Fleet**

The ANG possesses over 40% of the Combat Air Force's (CAF) Air Dominance capability. These units also provide 37% of the nation's Aerospace Control Alert (ACA) assets ensuring 24-hour homeland defense. F-15s have performed over 600 alert scrambles since Sept 11, 2001.



Operating six combat-coded F-15 squadrons, compared to three in the Active Duty, the ANG possesses the majority of the air superiority assets available for Air Expeditionary Forces (AEF) commitments. Additionally, the ANG operates the USAF's only F-15 flying training unit at the 173FW, Klamath Falls IAP, OR and will train all F-15 pilots for both the ANG and the Active Duty Air Force.

Current F-15 modernization programs are necessary to improve this combat-proven fighter's capabilities for both homeland defense and overseas contingency operations. These programs include the APG-63(v)3 AESA radar, as well as an Advanced Self-Protection suite, Advanced Targeting Pod integration, and Infrared Search and Track (IRST) system. Improved cockpit displays are also required to efficiently present these new capabilities to the pilot.

The ANG also has two F-22 classic associate units at Langley AFB, VA and Tyndall AFB, FL. Additionally, the Hawaii ANG will complete their F-22 conversion in CY12 to become the first operational ANG F-22 squadron. The Hawaii ANG will provide ACA support for the Hawaiian Islands and Air Dominance for the Pacific theatre.

Modernization efforts must be continued to ensure critical Raptor capability requirements are met. Increment 3.2C software, combined with the Common Configuration Program and Survivability Enhancements, will ensure the Raptor remains unmatched in aerial combat while communication upgrades and a helmet mounted display will enable the F-22 to efficiently accomplish their alert taskings.



F-15 and F-22

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Critical Capabilities List

F-15:

- Active Electronically Scanned Array (AESA) Radar / Infrared Search-and-Track System (IRSTS)
- Improved Operational Flight Program (OFP) Development / Fielding Process
- Upgraded Cockpit Displays
- Modernized Self Protection Suite (Combat Identification, Digital Radio Frequency Memory Jammer, Digital Radar Warning Receiver, BOL AN/ALE-58 Countermeasures Dispenser, Fiber-Optic Towed Decoy)
- Advanced Targeting Pods

F-22:

- ACC Modernization Roadmap through Increment 3.2C
- Common Configuration Program (Block 30 upgrade)
- Communications Upgrade (Broadband Data Link, Beyond Line-of-Sight Communications, Imagery Transmit/Receive)
- Color Helmet Mounted Display
- Survivability Enhancements

Essential Capabilities List

F-15:

- External Missile Launcher
- Conformal Fuel Tanks (CFT)
- High Fidelity Simulators at Air National Guard Bases
- 5th / 4th Generation Data Link
- Advanced Data Computer

F-22:

- None

Desired Capabilities List

F-15:

- Common AESA Configuration
- Offensive Electronic Warfare
- Air Launch Hit-to-Kill (ALHK)
- U.S. Government Owned OFP
- Next Generation Missile

F-22:

None

F-15 EXECUTIVE SUMMARY

Modernization Priority Profiles (\$ Million)

Program	2013	2014	2015
AESA Radar	\$42.00 ²	-	-
IRST System	- \$10.00 ³	\$70.00 ² -	\$70.00 ² -
OFP Development	\$30.00 ³	\$30.00 ³	\$30.00 ³
Cockpit Displays	\$5.37 ²	\$5.36 ²	\$4.20 ²
Advanced Digital RWR	\$24.37 ²	\$24.38 ²	\$24.38 ²
Advanced Digital RFCM	\$36.31 ² \$25.00 ³	\$36.31 ² -	\$36.31 ² -
BOL	\$2.09 ²	\$2.09 ²	2.09 ²
Combat Identification	\$11.33 ² \$2.50 ³	\$11.33 ² -	\$11.33 ² -
Advanced Targeting Pod	\$4.20 ²	-	-

Notes: ¹ 3840 Appropriation ² 3010 Appropriation ³ 3600 Appropriation ⁴ 3080 Appropriation

- Active Electronically Scanned Array (AESA) Radar - Provides state-of-the-art capability to detect, track and target traditional and asymmetric threats for homeland and in-theater air defense.
- Infrared Search and Track (IRST) System - Provides passive sensor that couples with AESA radar to enable effective targeting in radar jamming environments and against asymmetric threats.
- OFP Development and Fielding - Provides rapid OFP development and fielding process to enable expedited avionics upgrades that will significantly improve the F-15's combat capability.
- Cockpit Displays - Provides upgraded displays to improve the human factors interface between the pilot and the information used for situational awareness and weapons employment.
- Advanced Digital Radar Warning Receiver (RWR) - Detects enemy radars for improved situational awareness and survivability in threat environments.
- Advanced Digital Radio Frequency Countermeasures (RFCM) - Degrades enemy's airborne and ground-based radars to provide survivability in previously denied access airspace.
- BOL Infrared Countermeasures (IRCM) - Provides advanced, long-duration infrared countermeasures against air-to-air and surface-to-air missile systems.
- Combat Identification - Improves combat identification capability to enable the pilot to rapidly discriminate friendly aircraft and engage hostile aircraft.
- Advanced Targeting Pod (ATP) - Vastly improves day and night acquisition and combat identification. Enables F-15 pilots to visually identify targets at night and visually track asymmetric targets in support of homeland defense missions.

F-15 ACTIVE ELECTRONICALLY SCANNED ARRAY (AESA) RADAR

1. Background. The APG-63(v)3 Active Electronically Scanned Array (AESA) radar exponentially increases detection and track ranges of airborne targets and greatly improves identification capability. AESA radar gives the F-15C true multi-target track and attack capability, as well as a vastly increased capability against advanced Electronic Attack (EA) from enemy systems. Additionally, AESA eliminates the hydraulic and electrical systems associated with mechanically operated radars resulting in dramatically improved reliability and maintainability. The current radar systems in ANG F-15s are the APG-63(v)0 and (v)1. The APG-63(v)0 is 1970s technology and is unable to keep pace with current and postulated threats. The Mean Time Between Failure (MTBF) for the legacy (v)0 is 10 - 12 hrs of flight time, while the MTBF for the (v)3 AESA radar is over thirty times greater. The addition of the APG-63(v)1 to ANG has increased the MTBF for the radar for equipped aircraft, but it does not possess the asymmetric threat capability enjoyed by the AESA. The F-15's air-to-air advantage remains Beyond-Visual-Range (BVR). BVR requires an ability to detect airborne threats to retain the first shot, first kill ability, which is essential to effective employment. AESA radar is also critical for Homeland Defense missions. The inherent capability of the AESA radar allows pilots to locate a Target of Interest in the saturated air traffic environments prevalent around major population centers. The AESA radar also provides the capability to detect and track asymmetric threats. The requirement for ANG F-15Cs is 48 AESA radars. This allows each operational ANG unit to provide AESA-equipped F-15Cs for worldwide deployment while simultaneously providing 24 / 7 Homeland Defense at ACA alert sites. To date, Congressional appropriations have purchased 29 AESA systems for the ANG outside the DOD budget request.

2. Source of Need. F-15C/D Radar Improvement Program, APG-63(v)3 CDD, 21 Apr 05.

3. Impact If Not Funded. ANG F-15s are tasked for threat areas throughout the world as part of the Air and Space Expeditionary Force (AEF) and while defending the Homeland on Air Sovereignty Alert (ASA). Without AESA radar, the F-15 may be unable to counter both asymmetric threats and enemy fighters.

4. Units Impacted.

104 FW Westfield, MA	142 FW Portland IAP, OR	159 FW New Orleans, LA
120 FW Great Falls IAP, MT	144 FW Fresno, CA	173 FW Klamath Falls, OR
125 FW Jacksonville IAP, FL		

5. Contractors. Raytheon, El Segundo, CA; Boeing Company, St Louis, MO.

6. Cost. PEC: 0207130F

Units Required	Unit Cost	Program Cost
14 AESA Systems (3010)	\$6,000,000	\$84,000,000
Total		\$84,000,000

F-15 INFRARED SEARCH-AND-TRACK (IRST) SYSTEM

1. Background. The IRST system is an external pod carried by the F-15 and is a completely passive sensor that detects and tracks the heat generated by an airborne target. The current fighter threat employs Digital Radio Frequency Memory Electronic Attack methods that degrade radar performance, but IRST is completely passive and is not susceptible to EA. Asymmetric threats, such as cruise missiles and slow-moving, light aircraft, are difficult to detect with conventional airborne radars but can be detected and tracked with IRST. IRST provides a complementary capability to a fighter's radar for detection and weapons cueing; it is not a capability that should be used in lieu of AESA radars, but as part of the integrated fire-control system in a radar jamming environment. IRST is a game-changing capability essential to current and future air dominance and a critical enabler for currently unfilled mission sets, such as airborne ballistic missile defense.

2. Source of Need. F/A-18 Infrared Search and Track System CDD, Mar 11; USAF Annex, in coordination; ARC 2011 WEPTAC.

3. Impact If Not Funded. ANG F-15s are tasked for threat areas throughout the world as part of the Air and Space Expeditionary Force (AEF) while defending the Homeland. Based on current and emerging threats, both traditional and asymmetric, the F-15 will be unable to provide tasked Homeland Defense and is vulnerable when countering enemy airborne fighters in a deployed environment.

4. Units Impacted.

104 FW	Westfield, MA	142 FW	Portland IAP, OR	159 FW	New Orleans, LA
120 FW	Great Falls IAP, MT	144 FW	Fresno, CA	173 FW	Klamath Falls, OR
125 FW	Jacksonville IAP, FL				

5. Contractors. Lockheed Martin, Orlando, FL.

6. Cost. PEC: 0207130F, 0207134F

Units Required	Unit Cost	Program Cost
NRE* (3600)	N/A	\$25,000,000
50 IRST Systems** (3010)	\$3,500,000	\$175,000,000
Total		\$200,000,000

*Additional 3600 may be provided by USN and/or USAF.

**Assumes Full Rate Production.

F-15 IMPROVED OPERATIONAL FLIGHT PROGRAM (OFP) DEVELOPMENT / FIELDING PROCESS

1. Background. All current and future F-15C upgrade programs rely heavily on aircraft OFP integration. The OFP controls the interaction of all major aircraft avionics systems including the APG-63v3 radar system. Without this OFP integration, the F-15C cannot realize the full potential of its currently fielded systems, and it may prevent or limit the acquisition of future systems. The current OFP development and fielding process operates on four year cycles and are often extended due to contracting delays. The cycle time creates significant delays for inclusion of time critical software updates, to include radar electronic protection. These software updates are required to ensure the F-15C can maintain its combat edge at home and abroad. The software development and testing timeline must be accelerated to two years or less in order to meet this crucial requirement.

2. Source of Need. F-15C/D Operational Requirements Document, ARC 2011 WEPTAC.

3. Impact if not Funded. Failure to increase funding to expedite OFP development and fielding will significantly degrade the F-15's capability to counter the emerging threats in world-wide operations and for homeland defense.

4. Units Impacted.

104 FW	Westfield, MA	142 FW	Portland IAP, OR	159 FW	New Orleans, LA
120 FW	Great Falls IAP, MT	144 FW	Fresno, CA	173 FW	Klamath Falls, OR
125 FW	Jacksonville IAP, FL				

5. Contractors. Raytheon, El Segundo, CA; Boeing Company, St Louis, MO.

6. Cost. PEC: 0207134F

Units Required	Unit Cost *	Program Cost **
OFP Development(3600)	\$30,000,000	\$150,000,000
Total		\$150,000,000

* Annual cost to accelerate development cycles.

** Total cost is repeating, but shown over five year planning.

F-15 COCKIT UPGRADES DISPLAYS AND ADVANCED TARGETING POD (ATP) INTEGRATION

1. Background. The current displays in the F-15 cockpit were designed based on the amount of information that needed to be displayed to the pilot in the 1970s. The F-15 has experienced an exponential growth in capability and lethality in its thirty plus years of combat-proven service due to the modernization or addition of new radars, weapons, and addition of new sensors and new data links. These enhancements require a complex pilot interface to be fully utilized. The current legacy displays are incapable of intuitively displaying this information due to their small size and outdated monochromatic technology. Replacement of legacy displays with larger color and/or smart color display systems will increase the lethality of ANG F-15s by more intuitively displaying and processing data. The addition of a color display will allow the pilot to interpret the data more quickly, which will increase the effectiveness of the pilot-to-vehicle interface, allowing the pilot to make full operational use of current and planned aircraft capabilities. Addition of these new displays will not only improve pilot awareness, but will also facilitate rapid integration of the ATP into the F-15 fleet. ATPs will bring vastly improved day and night target acquisition and combat ID at extended ranges. ATPs are required for domestic ACA missions in order to track and target asymmetric threats, aid in target identification, and conduct maritime interdiction taskings.

2. Source of Need. F-15C/D Operational Requirements Document; ARC 2011 WEPTAC.

3. Impact If Not Funded. Without the addition of new displays, ANG F-15 pilots will not be able to process the information provided by on and off board sensors, thereby reducing operational effectiveness. Not funding ATP integration will limit the ANG's ability to effectively fulfill its Air Expeditionary Force and Homeland Defense missions. It will restrict the pilot's capability to acquire, identify, and successfully engage hostile forces or asymmetric targets at range degrading the pilot's ability to covertly and safely identify targets.

4. Units Impacted.

104 FW	Westfield, MA	142 FW	Portland IAP, OR	159 FW	New Orleans, LA
120 FW	Great Falls IAP, MT	144 FW	Fresno, CA	173 FW	Klamath Falls, OR
125 FW	Jacksonville IAP, FL				

5. Contractors. Boeing Company, St. Louis, MO; CALCULEX, Las Cruces, NM; TBD.

6. Cost. PEC: 0207130F

Units Required	Unit Cost	Program Cost
130 Radar Displays (3010)	\$82,500	\$10,725,000
105 RWR Displays (3010)	\$80,000	\$8,400,000
105 ATP Group A (3010)¹	\$40,000	\$4,200,000
Total		\$23,325,000

¹Assumes full purchase and integration of the RWR Cockpit Display.

F-15 MODERNIZED SELF-PROTECTION SUITE

1. Background. The current F-15C/D electronic warfare internal self protection suite is comprised of EW equipment designed in the 1980s which are incapable of providing adequate defensive situational awareness and countermeasures against some present and most future radar systems. Today, both systems suffer from sustainment issues and have significant capability issues against modern threat systems. A robust integrated electronic attack suite enables the F-15 to counter current and future radars, especially the fighters F-15s are tasked to employ against. The attributes of this integrated suite shall incorporate digital radar warning receiver (RWR), a Digital Radio Frequency Memory internal jammer, ALE-58 BOL, an ungraded ALQ-128 and be compatible with an APG-63(V)3 F-15C. The AF documented these requirements in a Capabilities Design Document (CDD) entitled Eagle Passive Active Warning Survivability System.

2. Source of Need. TAF 304-80-I/II/III-C System ORD for the F-15A-D Tactical Electronic Warfare Suite dated 7 Apr 92. JROC EPAWSS CDD Jun 07.

3. Impact If Not Funded. The F-15C/D's ability to provide air dominance is at risk from the current and future threat systems that are proliferating throughout potential deployment areas. The lack of a robust self-protection system directly affects combat capability and survivability. F-15's will be restricted from entering any "access denied" areas preventing mission execution and ultimately resulting in mission failure.

4. Units Impacted.

104 FW	Westfield, MA	142 FW	Portland IAP, OR	159 FW	New Orleans, LA
120 FW	Great Falls IAP, MT	144 FW	Fresno, CA	173 FW	Klamath Falls, OR
125 FW	Jacksonville IAP, FL				

5. Contractor. BAE Systems, Austin, TX; Boeing Company, St Louis, MO; Northrop Grumman, Rolling Meadows, IL.

6. Cost. PEC: 0207130F, 0207134F

Units Required	Unit Cost	Program Cost
RWR NRE (3600)	8,000,000	\$8,000,000
103 RWR Receivers (3010)	\$710,000	\$73,130,000
RFCM NRE (3600)	\$50,000,000	\$50,000,000
103 RFCM Systems (3010)	\$1,410,000	\$145,230,000
103 BOL Kits (3010)	\$120,000	\$12,360,000
ALQ-128 NRE (3600)	\$5,000,000	\$5,000,000
103 ALQ-128 Systems (3010)	\$440,000	\$45,320,000
Total		\$339,040,000



F-16C



F-16C

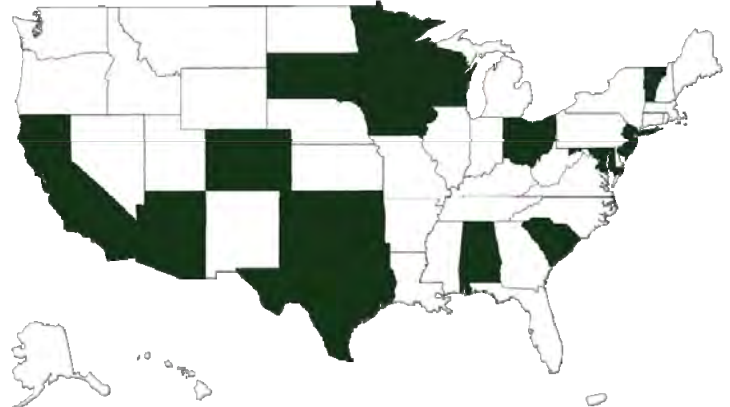
- **Close Air Support / Interdiction / Precision Strike**
- **Suppression/Destruction of Enemy Air Defenses (SEAD/DEAD)**
- **Air Superiority for Homeland Defense**
- **ANG F-16C Units Provide 37% of the Total Fleet**

Since September 11, 2001, Air National Guard F-16s have flown over 157,616 hours in direct support of contingencies around the globe including Operations NOBLE EAGLE, IRAQI FREEDOM, ENDURING FREEDOM, NEW DAWN, and homeland defense scrambles. Since 2003, ANG F-16Cs have fulfilled over 30% of CENTAF precision guided munitions (PGM) and close air support (CAS) taskings, including convoy escort, dedicated infrastructure defense, border patrol, and raid support.



The ANG operates 358 Block 25, 30, 32, 40, 42, 50 and 52 F-16C/Ds. Block 25/30/32 aircraft are equipped with situational awareness datalink (SADL) and provide a near-constant presence in operational theaters conducting close air support and armed reconnaissance taskings. The unique datalink capabilities provided by SADL make the ANG F-16 Block 30 a platform of choice for operations requiring advanced integration with ground units in the CENTOM theater. Capability enhancements to the Block 40/42 and Block 50/52 aircraft will be the Air Force's only SEAD capable platform until future 5th Generation, SEAD capable aircraft become fully operational.

Modernization efforts are underway to improve the war fighting capabilities of ANG F-16s by fielding affordable systems with secure & beyond line-of-sight communication suites, smart displays with data processing capability, advanced target cueing for air & ground weapons employment, enhanced self protection suites, Small Diameter Bomb, and improved radar performance/reliability.



TAB H

F-16

2011 Weapons and Tactics Conference

Critical Capabilities List

- Fully Integrated Sensor Enhancements
- Integrated Electronic Warfare (EW) Suite
- Additional Enhancements and Procurement of Advanced Targeting Pods
- Secure Line-of-Sight (SLOS) and Beyond Line-of-Sight (BLOS) with 3-D Audio Communications
- Day/Night Compatible Helmet Mounted Integrated Targeting (HMIT)
- Additional High Resolution

Essential Capabilities List

- SAASM Embedded GPS Inertial Navigation System (EGI)
- Improved Passive Detection and Engagement in a High EA Environment
- Specialized Combat Search and Rescue/Urban Close Air Support Weapons
- Digital Video Recorder (DVR) Phase 2
- Low Collateral Damage Precision Guided Weapons (Laser-Guided Rockets/Maverick)
- Laser Sensor Hardening

Desired Capabilities List

- Smart Triple Advanced Rack (STAR)
- Incremental Development of TGP Data Links Supporting Two-Way Encrypted Video Downlink
- Simulation Training Device Upgrade
- Laser Eye Protection
- Military Navigation (MNAV)

F-16 EXECUTIVE SUMMARY

Modernization Priority Profiles (\$ Million)

Program	2013	2014	2015
Fully Integrated Sensor Enhancements			
AESA	-	-	\$24.12 ²
	\$34.90 ³	\$47.60 ³	\$39.10 ³
APG-68+	-	-	\$41.54 ²
	\$10.00 ³	\$10.00 ³	-
Fully Integrated Sensor Enhancements			
Block 42AIFF kits	\$6.94 ²	\$6.64 ²	-
Block 30/32 retrofit kits	-	\$4.30 ²	\$4.20 ²
Fully Integrated Sensor Enhancements - IRST Pod	-	\$60.30 ²	\$112.80 ²
	\$25.00 ³	-	-
Helmet Mounted Integrated Targeting (HMIT)	\$8.81 ²	\$8.81 ²	\$2.44 ²
Joint Helmet Mounted Cueing System (JHMCS)	\$10.32 ²	\$10.32 ²	\$10.32 ²
High Resolution Display			
Center Color Display	\$13.23 ²	\$13.23 ²	\$4.04 ²
Integrated Broadcast Service	\$12.67 ²	\$12.67 ²	\$3.87 ²
Integrated Electronic Warfare Suite			
ALR-69 Upgrades	-	\$4.75 ²	\$9.51 ²
	\$22.84 ³	-	-
ALR-56 Upgrades	-	\$4.76 ²	\$9.52 ²
	\$50.00 ³	-	-
EA Pod Upgrades	-	\$15.84 ²	\$31.68 ²
	\$31.00 ³	-	-
ALQ-213 Upgrades	-	\$4.48 ²	\$8.96 ²
	\$28.00 ³	-	-
Missile Warning System	-	\$39.90 ²	\$79.80 ²
	\$4.12 ³	-	-
Advanced Targeting Pod			
4 th Gen Upgrades	\$49.50 ²	-	-
ATP Procurement	\$34.00 ²	-	-
Secure LOS and Beyond LOS w/ 3-D Audio Comm			
2nd ARC-210	\$10.80 ²	\$10.80 ²	\$3.30 ²
Directional Audio	\$8.88 ²	\$8.88 ²	\$8.88 ²
	\$5.20 ³	-	-

Notes: ¹ 3840 Appropriation ² 3010 Appropriation ³ 3600 Appropriation ⁴ 3080 Appropriation

- F-16 Fully Integrated Sensor Enhancements - Active Electronically Scanned Array (AESA) Radar - Replaces mechanically scanned radar in Block 42/52 with AESA for improved detection and targeting of ground and air targets.
- F-16 Fully Integrated Sensor Enhancements - Block 30/32/40/42 Advanced Identification Friend/Foe (AIFF) - Provides Block 30/32/40/42 aircraft with Mode 5/S and the capability to interrogate air targets utilizing the APX-125-60.

- F-16 Fully Integrated Sensor Enhancements - Infrared Search-and-Track (IRST) Pod - Enables passive detection and tracking of asymmetric and radar jamming threats for both homeland defense and in-theater operations.
- F-16 Integrated Electronic Warfare (EW) Suite - Improves detection, identification, and geo-location of current and emerging radar guided threat systems. Increases processor speed (10x) and memory size (100x) while enabling capacity to facilitate future software updates. Upgrades pods with digital radio frequency memory (DRFM). Pylon based MWS provides capability to detect and counteract infrared guided threat systems.
- F-16 Advanced Targeting Pod (ATP) Upgrades and Procurement - Allows warfighter to employ precision-guided munitions, coordinate with ground elements, and target airborne threats.
- Secure Line-Of-Sight (SLOS) and Beyond Line-Of-Sight (BLOS) with 3-D Audio Communications - Provides advanced secure and beyond line-of-site communications for integration with ground forces and homeland defense agencies. Provides directional audio/noise cancelling to help pilot process information coming simultaneously from multiple radios.
- F-16 Day/Night Compatible Helmet Mounted Integrated Targeting (HMIT) - Provides day/night, self-cueing for air and ground weapons employment, standoff capability and full sensor-to-pilot fusion.
- F-16 Additional High Resolution Display - Center Display Unit (CDU) - Replaces flight instruments with color display to provide high-resolution image from 4th generation targeting pods to the pilot. Allows aircrew to transmit and receive real-time data from national sources through the display while providing en-route threat warning.

F-16 INTEGRATED SENSOR ENHANCEMENTS - ACTIVE ELECTRONICALLY SCANNED ARRAY RADAR

1. Background. Air National Guard (ANG) F-16 Block 40/42/50/52 aircraft require new Active Electronically Scanned Array (AESA) radars to replace the current APG-68 mechanically-scanned radar to effectively employ homeland defense and Suppression/Destruction of Enemy Air Defenses (SEAD / DEAD) roles. New AESA radars can perform detection, tracking, communication, and jamming functions in multiple directions simultaneously. They provide the capability to detect, track, and eliminate multiple airborne threats, allowing pilots to locate Targets of Interest in dense air traffic environments prevalent around major population centers, a critical capability for Air Control Alert. The system's ability to generate large Synthetic Aperture Radar maps is necessary to engage surface targets and perform the full-spectrum of combat capabilities in poor weather conditions, amplifying the strike capability of SEAD/DEAD missions. Additionally, AESA radars eliminate several components associated with mechanical radars, thus dramatically improving reliability and maintainability costs. Previous demonstrations have proven that AESA radars fit within existing cooling and electrical capacity on the aircraft, thereby reducing installation complexity and cost. APG-68 radar system upgrades may provide some capability and supportability enhancements on F-16s that may not receive an AESA radar upgrade.

2. Source of Need. TAF 303-76-I/II/III-A SORD for the F-16C/D, CAF ORD 303-76-I/II/III-D F-16C/D MSIP ORD (14 Aug 00).

3. Impact If Not Funded. As the technology of unfriendly nations continues to mature, the existing capabilities on U.S. fighters are becoming less effective against asymmetric threats and enemy fighters. Without the inherent capabilities and reliability of an AESA radar, the survivability and lethality of the F-16, half the Air Force's fighter inventory, will diminish.

4. Units Impacted.

113 WG JB Andrews, MD	140 WG Buckley, CO	177 FW Atlantic City IAP, NJ
115 FW Truax Field, WI	144 FW Fresno, CA	180 FW Toledo, OH
132 FW Des Moines, IA	158 FW South Burlington, VT	187 FW Dannelly Field, AL
138 FW Tulsa, OK	162 FW Tucson, AZ	

5. Contractor. Northrop Grumman, Baltimore, MD; Raytheon, El Segundo, CA.

6. Cost. PEC: 0207133F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$120,000,000
93 Block 40/50 AESA Radars (3010)	\$2,500,000	\$232,500,000
APG-68+ NRE (3600)	N/A	\$20,000,000
186 Block 30 APG-68+ kits (3010)	\$670,000	\$124,620,000
Total		\$497,120,000

F-16 INTEGRATED SENSOR ENHANCEMENTS - BLOCK 30/32/40/42 ADVANCED IDENTIFICATION FRIEND/FOE

1. Background. Air National Guard (ANG) F-16s fulfill defensive counter-air tasking in the Air and Space Expeditionary Force as well as Aerospace Control Alert (ACA) missions over the United States. The Advanced Identification Friend/Foe (AIFF) provides an interrogator capability that enables the F-16 to meet established Rules-of-Engagement for identifying aircraft. Furthermore, interrogator capability is vital in the ACA role ensuring proper Target of Interest identification, avoidance of civilian air traffic in dense airspace, and timely intercept completion. The Block 50/52 F-16 fleet is replacing older model interrogators with the updated APX-125-60, which addresses the new Mode S requirement for the Global Air Traffic Management system and the Congressionally mandated Mode 5 requirement. ANG Block 42s are tasked with ACA and require the same system as the Block 50 aircraft. ANG Block 25/30/32 aircraft currently employ the APX-113-56, which does not have Mode 5/S. Retrofitting the Block 30/32 aircraft with APX-125-60 components resolves the aircraft Mode 5/S capability gap.

2. Source of Need. TAF 303-76-I/II/III-A SORD (Jul 91) for the F-16 Blk-40. NORTHCOM Integrated Priority List.

3. Impact If Not Funded. The system increases the intercept success of ACA mission in high density traffic areas, radar-cluttered environments, and limited air surveillance coverage areas. Lack of an interrogation capability risks intercepting wrong target and improper TOI identification, delays intercepts and presents a safety of flight concern in congested environments.

4. Units Impacted.

113 WG JB Andrews, MD	140 WG Buckley, CO	177 FW Atlantic City IAP, NJ
115 FW Truax Field, WI	144 FW Fresno, CA	180 FW Toledo, OH
132 FW Des Moines, IA	158 FW South Burlington, VT	187 FW Dannelly Field, AL
138 FW Tulsa, OK	162 FW Tucson, AZ	

5. Contractor. BAE Systems, Greenlawn, NY.

6. Cost. PEC: 0207133F

Units Required	Unit Cost*	Program Cost
Block 42 Integration NRE (3010)	N/A	\$2,300,000
45 Block 42 APX-125-60 kits (3010)	\$305,624	\$13,753,080
79 Block 30 APX-125-60 retrofit kits (3010)	\$107,595	\$8,500,005
Total		\$24,553,085

* Includes 10% spares.

F-16 INTEGRATED SENSOR ENHANCEMENTS - INFRARED SEARCH-AND-TRACK POD

1. Background. The Infrared Search-and-Track (IRST) pod is a completely passive sensor that detects and tracks the heat generated by an airborne target. Asymmetric threats such as cruise missiles and small unmanned vehicles are difficult to detect with the existing conventional mechanically scanned F-16 radar. IRST systems offer robust tracking capabilities against nearly all airborne targets. This capability is key to Aerospace Control Alert (ACA) operations in defense of the homeland. Current fighter threats employ Digital Radio Frequency Memory Electronic Attack (EA) methods that degrade radar performance. However, the passive nature of IRST is not susceptible to such jamming. IRST provides a complementary capability to an active electronically scanned fighter radar for detection and targeting in both radar jamming and high priority ACA environments. The Air National Guard (ANG) requires a minimum of forty (40) IRST pods to support operations at ten (10) F-16 ACA sites, twenty (20) pods to support training, and eighteen (18) pods to support overseas contingency operations. IRST pods can be shared between the F-16 and F-15 fleets.

2. Source of Need. TAF 303-76-I/II/III-A SORD for the F-16C/D, CAF ORD 303-76-I/II/III-D F-16C/D MSIP ORD (14 Aug 00).

3. Impact If Not Funded. ANG F-16s will face continued limitations in tracking and targeting asymmetric threats and operating in dense EA environments. IRST capability is a high interest homeland defense item for both North American Aerospace Defense Command and United States Northern Command.

4. Units Impacted.

113 WG JB Andrews, MD	140 WG Buckley, CO	177 FW Atlantic City IAP, NJ
115 FW Truax Field, WI	144 FW Fresno, CA	180 FW Toledo, OH
132 FW Des Moines, IA	158 FW South Burlington, VT	187 FW Dannelly Field, AL
138 FW Tulsa, OK	162 FW Tucson, AZ	

5. Contractor. TBD.

6. Cost. PEC: 0207133F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$25,000,000
78 IRST Pods (3010)	\$3,900,000	\$304,200,000
Total		\$329,200,000

F-16 INTEGRATED ELECTRONIC WARFARE SUITE

1. Background. Current F-16 Block 30/32/40/42/50/52 Electronic Warfare (EW) suite is comprised of a series of EW equipment designed in the 1980s which are incapable of providing adequate defensive situational awareness and countermeasures against some present and most future radar systems. Today, both systems suffer from sustainment issues and have significant capability issues against modern threat systems. A robust integrated electronic attack suite will enable all F-16 blocks to counter current and future radars. The attributes of this integrated suite shall incorporate an upgraded digital radar warning receiver (RWR), a digital radio frequency memory upgraded electronic attack (EA) pod, a pylon missile warning system (MWS) and the ALQ-213 legacy Electronic Combat (EC) integration system. The F-16 fleet has two legacy analog RWRs (ALR-69 and ALR-56M) and two legacy analog EA pods (ALQ-131 and ALQ-184). All require sustainment as well as digital based performance upgrades. The ALQ-213 EC integration system is installed on all F-16 pre-blocks but must be installed on all F-16 high blocks.

2. Source of Need. AN/ALR-69A CPD approved by AFROC, 17 Nov 05, CAF 301-01-B, F-16 C/D Block 25/30/32 MSIP ORD (15 Dec 04), CAF ORD 303-76-I/II/III-D F-16C/D MSIP ORD (14 Aug 00).

3. Impact If Not Funded. F-16s will remain at risk to many current and all advanced threat systems resulting in areas of denied access, significantly impacting the pilot's ability to accomplish assigned missions and meet combatant commanders' requirements.

4. Units Impacted.

113 WG JB Andrews, MD	140 WG Buckley, CO	177 FW Atlantic City IAP, NJ
115 FW Truax Field, WI	144 FW Fresno, CA	180 FW Toledo, OH
132 FW Des Moines, IA	158 FW South Burlington, VT	187 FW Dannelly Field, AL
138 FW Tulsa, OK	162 FW Tucson, AZ	

5. Contractor. TBD.

6. Cost. PEC: 0207133F

Units Required	Unit Cost *	Program Cost
ALR-69 NRE (3600)	\$22,840,000	\$22,840,000
290 ALR-69 Upgrades (3010)	\$82,000	\$23,780,000
ALR-56M NRE (3600)	\$50,000,000	\$50,000,000
70 ALR-56M Upgrades (3010)	\$340,000	\$23,800,000
EA Pod NRE (3600)	\$31,000,000	\$31,000,000
60 EA Pod Upgrades (3010)	\$1,320,000	\$79,200,000
ALQ-213 NRE (3600)	\$28,000,000	\$28,000,000
141 ALQ-213 (3010)	\$160,000	\$22,560,000
150 MWS with 3D Audio (3010)	\$1,330,000	\$199,500,000
MWS/3D GSE (3080)	1 lot	\$4,120,000
Total		\$484,800,000

* Includes 10% spares.

F-16 ADVANCED TARGETING POD

1. Background. Procurement of Advanced Targeting Pods (ATP) has been an Air National Guard (ANG) top priority for several years. A total of 150 Northrop Grumman Litening pods (65 AT, 22 G4 New and 63 G4 Upgrade) and 42 Lockheed Martin Sniper XR targeting pods were funded between FY98 and FY09. Litening and Sniper are multi-sensor systems that enhance contingency and Aerospace Control Alert (ACA) operations. Fielded Litening AT and Sniper pods employ 3rd generation Forward Looking Infrared (FLIR) and Electro-Optical (EO) television / Charge-Coupled Device (CCD) imaging sensors to provide standoff capability, precise targeting of GPS-guided weapons, and air-to-air identification. ATP Video Downlink (VDL) provides streaming video to Tactical Air Control Parties and Joint Terminal Attack Controllers equipped with Remotely Operated Video Enhanced Receiver terminals. Modernization with 4th generation capability, including 1K FLIR, 1K CCD, Laser Target Image Processing, and digital video downlinks vastly improves day and night target acquisition at extended ranges in both air-to-ground and air-to-air roles. The ANG requires 4th generation capability on all ATPs. Twenty (20) additional ATPs are required for domestic ACA aircraft in order to track and target asymmetric threats, aid in target identification and conduct maritime interdiction taskings. All future pod procurements will utilize the USAF's new ATP-SE contract providing baseline 4th generation capabilities and improved functionality.

2. Source of Need. Combatant Commander Urgent Need Request (UNR), Nov 04.

3. Impact If Not Funded. Not funding will limit the ANG's ability to effectively fulfill its Air Expeditionary Force (AEF) and Homeland Defense taskings. It will severely restrict the capability of pilots to acquire, identify, and successfully engage hostile forces. It will limit the standoff capability of our current GPS and Laser-Guided weapons and degrade the pilot's ability to detect, track, and target threats in defense of the homeland during air sovereignty missions.

4. Units Impacted.

113 WG JB Andrews, MD	140 WG Buckley, CO	162 FW Tucson, AZ
114 FW Sioux Falls, SD	144 FW Fresno, CA	169 FW McEntire JNGS, SC
115 FW Truax Field, WI	148 FW Duluth, MN	177 FW Atlantic City IAP, NJ
132 FW Des Moines, IA	149 FW Lackland AFB, TX	180 FW Toledo, OH
138 FW Tulsa, OK	158 FW South Burlington, VT	187 FW Dannelly Field, AL

5. Contractor. Lockheed Martin, Orlando, FL; Northrop Grumman, Rolling Meadows, IL.

6. Cost. PEC: 0207133F

Units Required	Unit Cost	Program Cost
33 4 th Gen Upgrades (3010)	\$1,500,000	\$49,500,000
20 ATP-SE Pods (3010)	\$1,700,000	\$34,000,000
Total		\$83,500,000

F-16 SECURE LINE-OF-SIGHT AND BEYOND LINE-OF-SIGHT WITH 3-D AUDIO COMMUNICATIONS

1. Background. Upgrades to F-16s provide Secure Line-Of-Sight (SLOS) and improved Beyond Line-Of-Sight (BLOS) communications through the installation of one ARC-210 radio. The ARC-210 modification provides an improved ability to securely communicate with ground forces and Command and Control (C2) nodes, but does not allow simultaneous operations on SLOS/BLOS frequencies. Homeland Defense (HD) and in-theater operations require simultaneous SLOS/BLOS communications to concurrently maintain contact with both C2 and friendly forces. A second ARC-210 permits growth to extended data and image transfer when linked to an advanced display. The combination of two ARC-210s plus a legacy radio (three radios total) allows in-theater communications on a C2 frequency, a secure tactical frequency with ground forces, and an intra-flight frequency. In the homeland defense mission, this radio configuration enables monitoring C2, air traffic control, and intra-flight frequencies. The integration of noise cancelling and directional (3-D) audio simplifies interpretation of simultaneous radio calls by spatially separating aural warning and radio signals. It provides angular cueing to ground and air threats when used in conjunction with a helmet mounted cueing system. This is critical to operations in remote areas and dense threat environments.

2. Source of Need. TAF 303-76-I/II/III-A SORD for the F-16C/D, CAF ORD 303-76-I/II/III-D F-16C/D MSIP ORD (14 Aug 00), CENTCOM UON. NORTHCOM Integrated Priority List.

3. Impact If Not Funded. Combat and Air Control Alert missions will remain vulnerable to encumbered intercept and engagement authentications caused by interrupted communications between fighters, ground forces, and C2 authorities. Furthermore, switching between radio channels to communicate with multiple parties slows mission execution and increases the likelihood aircrew members will miss vital information.

4. Units Impacted.

113 WG JB Andrews, MD	140 WG Buckley, CO	169 FW McEntire JNGS, SC
114 FW Sioux Falls, SD	148 FW Duluth, MN	177 FW Atlantic City IAP, NJ
115 FW Truax Field, WI	149 FW Lackland AFB, TX	187 FW Dannelly Field, AL
132 FW Des Moines, IA	158 FW South Burlington, VT	
138 FW Tulsa, OK	162 FW Tucson, AZ	

5. Contractor. ARC-210: Rockwell Collins, Cedar Rapids, IA. Directional Audio: TBD.

6. Cost. PEC: 0207133F

Units Required	Unit Cost *	Program Cost
259 2nd ARC-210 Radio Kits (3010)	\$150,000	\$38,850,000
Directional Audio NRE (3600)	5,200,000	\$5,200,000
259 Directional Kits (3010)	\$45,000	\$11,655,000
311 Group C Kits (3010)	\$6,700	\$2,083,700
10 Unit Test Equipment (3080)	\$43,800	\$438,000
Total		\$58,226,700

* Includes 10% spares.

F-16 DAY/NIGHT COMPATIBLE HELMET MOUNTED INTEGRATED TARGETING

1. Background. The Scorpion Helmet Mounted Integrated Targeting (HMIT) built by Gentex, and offered for the F-16 by Raytheon, reduces the time required to acquire targets with aircraft sensors from minutes to seconds, which can make the difference between acquiring a high-value, fleeting target or not. Currently, pilots typically acquire targets by pointing the aircraft at the target to place it within the Heads-Up Display Field of View. This is time consuming and maneuvers the aircraft closer to the threat. Scorpion can perform precise, head-steered weapons and sensor cueing enabling pilots to fly parallel to targets and maintain standoff distance, thus improving survivability. The cueing system allows rapid target acquisition giving aircrew the ability to acquire targets simply by looking at them. Furthermore, Scorpion's high resolution color display places information in front of the pilot's eye reducing heads-down time in the cockpit and improving survivability. The display technology allows pilots to quickly build a three-dimensional picture of the battlespace by placing data linked symbols over actual target, threat, and friendly positions. Scorpion is compatible with existing AN/AVS-9 Night Vision Goggles and fully supports night operations. ANG F-16 Block 40/42/50/52 aircraft are equipped with the day-only Joint Helmet Mounted Cueing System (JHMCS) but require a night cueing and display module compatible with the existing JHMCS.

2. Source of Need. JHMCS ORD CAF-USN 308-93-II-A Dec 1996, CAF 301-01-B, F-16C/D Block 25/30/32 MSIP ORD (15 Dec 04), CENTCOM Urgent Operational Need (UON).

3. Impact If Not Funded. Target misidentification, collateral damage, and fratricide potential are much higher without the display benefits of a HMIT.

4. Units Impacted

113 WG JB Andrews, MD	140 WG Buckley, CO	162 FW Tucson, AZ
114 FW Sioux Falls, SD	144 FW Fresno, CA	169 FW McEntire JNGS, SC
115 FW Truax Field, WI	148 FW Duluth, MN	177 FW Atlantic City IAP, NJ
132 FW Des Moines, IA	149 FW Lackland AFB, TX	180 FW Toledo, OH
138 FW Tulsa, OK	158 FW South Burlington, VT	187 FW Dannelly Field, AL

5. Contractor. Gentex, Aurora, IL; Raytheon Technical Services Indianapolis, IN; Vision Systems International LLC, San Jose, CA.

6. Cost. PEC: 0207133F

Units Required	Unit Cost *	Program Cost
166 HMIT Kits (3010)	\$122,451	\$20,326,866
129 JHMCS Night Kits (3010)	\$240,000	\$30,960,000
Total		\$51,286,866

*Includes 10% spares.

F-16 ADDITIONAL HIGH RESOLUTION DISPLAY

1. Background. ANG F-16 Block 30/32/40/42/50/52 aircraft require a new Central Display Unit (CDU) to transfer imagery with ground controllers, fully utilize fourth generation advanced targeting pod image quality, improve available processing power, and replace aging flight instruments. The new CDU will directly connect to the ARC-210 radio and provide pilots with the ability to securely transfer data, such as a targeting pod scenes, joint tactical air controller taskings, and updated target area imagery. The ability to transfer data and exploit digital targeting pod video is critical for rapid coordination with ground units during close air support missions and with command and control assets during time sensitive and emerging target operations. Expanding CDU with an Integrated Broadcasting Service (IBS) capability allows aircrew to receive real-time data from national sources through the display while providing en-route threat warning. Furthermore, the CDU contains additional processing capacity that allows for the manipulation of data external to the aircraft Operational Flight Program (OFP). This additional processing capacity provides pilots with the ability to insert mission planning data pre-mission via USB like interfaces, while opening low cost pathways for the integration of future weapons and updates without the costly and time consuming process of changing the OFP. Pilot selectable display options will provide electronic instrument flight displays (attitude, performance, and navigation) when required.

2. Source of Need. CAF 301-01-B, F-16C/D Block 25/30/32 MSIP ORD (15 Dec 04).

3. Impact If Not Funded. Pilots will remain unable to transfer imagery with ground controllers, exploit the improved image quality of next generation targeting pods in order to increase standoff while determining the intent of enemy combatants, and rapidly integrate emerging technologies, degrading their ability to effectively execute close air support, interdiction and time sensitive target taskings.

4. Units Impacted.

113 WG JB Andrews, MD	140 WG Buckley, CO	177 FW Atlantic City IAP, NJ
114 FW Sioux Falls, SD	148 FW Duluth, MN	187 FW Dannelly Field, AL
115 FW Truax Field, WI	149 FW Lackland AFB, TX	
132 FW Des Moines, IA	158 FW South Burlington, VT	
138 FW Tulsa, OK	169 FW McEntire JNGS, SC	

5. Contractor. Raytheon, Indianapolis, IN; DRS Defense Solutions, Bethesda, MD.

6. Cost. PEC: 0207133F

Units Required	Unit Cost *	Program Cost
259 Color Display Kits (3010)	\$183,764	\$47,594,876
259 IBS Receiver Kits (3010)	\$176,061	\$45,599,799
Total		\$93,194,675

* Includes 10% spares.



HH-60G



- **Combat Search and Rescue**
- **ANG HH-60G Units Provides 18% of the Total Fleet**

Air National Guard Combat Search and Rescue helicopters and crews play a critical and highly involved role in support of overseas Contingency Operations while also responding to increasingly high demand for domestic operations. These ANG CSAR helicopters are based in: 101RQS, Francis S. Gabreski Airport, NY; 129RQS, Moffett Federal Airfield, CA; 210RQS, Joint Base Elmendorf-Richardson, AK.



The 129RQS continues to provide civil search and rescue capabilities to the state of California and the rest of the nation. The 210RQS

continues to hold a 24-hour, state-wide, rescue alert in Alaska resulting in numerous lives saved. The 101RQS from New York provided life saving capabilities in the aftermath of Hurricane Irene and is always ready to respond anywhere in the country.

In FY11, the Air Force continued modernization programs for the HH-60G including programs started by the Air National Guard such as the Multi-function Color Display, Situational Awareness Data Link, Communication Upgrade and AN/ARS-6 v12 Personnel Locator System. While ACC has funded and is managing these programs for the total force, the Air National Guard would also like to pursue modernized aircraft defensive equipment and a helmet mounted display/cueing system. ANG funded programs expected to continue in the upcoming year are the GAU-21 Gun System and a Communications and Avionics Upgrade.



HH-60G

2011 Weapons and Tactics Conference

Critical Capabilities List

- Improved Communications Suite / Three Dimensional (3D) Audio
- Integrated Flight Deck SMFCD / SADL / LARS v12
- Hostile Fire Indicator With Enhanced Defensive Systems
- Improved / Advanced Weapons Systems
- Helmet Mounted Cueing / Point Designation

Essential Capabilities List

- Full-Motion Video / Video Downlink
- Aircrew Flight Equipment Enhancements
- GPS Certified Aircraft
- Distributed Mission Operations (DMO) Compatible T-Boss Simulators
- Standard Cockpit Re-configuration

Desired Capabilities List

- Improved Automatic Hover Hold System (IAHHS)
- Improved Power Train and Drive Train
- Improved Generators
- IFF Mode 5/S
- High Visibility Cockpit Doors

HH-60G

EXECUTIVE SUMMARY

Modernization Priority Profiles (\$ Million)

Program	2013	2014	2015
Improved Communication Suite With 3-D Audio	- \$4.30 ³	\$5.30 ² -	- -
Integrated Flight Deck SMFCD/SADL/LARSV12	\$5.76 ² \$1.00 ³	- -	- -
Hostile Fire Indicator With Enhanced Defensive Systems Suite	- \$21.20 ³ -	\$4.75 ² - \$.18 ⁴	\$4.96 ² - -
Improved/Advanced Weapons Systems	\$8.00 ²	-	-
Helmet Mounted Display/Cueing with Point Designation	- -	- \$6.00 ³	\$14.66 ² -

Notes: ¹ 3840 Appropriation ² 3010 Appropriation ³ 3600 Appropriation ⁴ 3080 Appropriation

- HH-60G Improved Communication Suite - Provides an improved secure multi-spectrum radio, a radio capable of broadcasting and receiving on civil frequencies and a radio capable of supporting the Airborne Network Waveform commonly used by ground warrior personnel.
- HH-60G Integrated Flight Deck SMFCD/SADL/LARSV12 - Integrates the Smart Multi-Function Color Display (SMFCD), Situational Awareness Data Link(SADL) and the Lightweight Airborne Recovery System Version 12 (LARS V12).
- HH-60G Hostile Fire Indicator with Enhanced Defensive Systems Suite - Provides a defensive system that alerts the crew to small arms and rocket propelled grenade fire with an integrated defensive system that will provide one control for all defensive systems and will host three dimensional audio to improve aircraft survivability and aircrew situational awareness.
- HH-60G Improved/Advanced Weapons Systems - Provides the Fabrique Nationale Herstal M3M .50 caliber machine gun with a high rate of fire that can suppress enemy threats up to 1500 meters, and the Dillon Aero M134D mini-gun is an ultra-reliable, GAU-2B mini-gun replacement which provides overall weight savings.
- HH-60G Helmet Mounted Display/Cueing System with Point Designation - Provides helmet mounted cueing and display capability to significantly increase pilot and crew situational awareness, weapons employment capability, enhance terminal area search and rescue operations, and speed internal communication during critical mission phases.

HH-60G IMPROVED COMMUNICATION SUITE WITH 3-D AUDIO

1. Background. The Homeland Defense mission of responding to civil taskings (natural and manmade disasters as well law enforcement operations) requires immediate and decisive operations to minimize the loss of life and property. The HH-60G has severely limited capability to communicate with civil responders, hindering rescue relief operations. A secure multi-spectrum radio will ensure military and civil command authorities can communicate directly with Air National Guard (ANG) rescue helicopters, and that these helicopters will be ready for any relief operation. In addition, the radio increases the HH-60G combat search and rescue capability by filling an existing secure radio shortfall. Also required is a Beyond Line of Sight radio that is capable of performing the Adaptive Networking Wideband Waveform (ANW2) that provides secure IP data to the tactical internet and can upgrade to the Soldier Radio Waveform (SRW). Three-dimensional audio is critical to providing task saturated aircrews the ability to prioritize and organize numerous simultaneous radio transmissions during all phases of flight. Three dimensional audio should be incorporated to include the defensive systems audio warnings.

2. Source of Need. Critical requirement identified at the 2011 ARC WEPTAC; lessons learned from Operations ENDURING FREEDOM (OEF) and IRAQI FREEDOM (OIF).

3. Impact If Not Funded. Lack of direct communication to on scene first responders will result in increased response time to civil disasters and risk loss of life and property.

4. Units Impacted.

106 RQW Gabreski Field, NY 129 RQW Moffett Federal Airfield, CA 176 WG JB Elmendorf , AK

5. Contractor. Raytheon, Fort Wayne, IN; Raytheon, Indianapolis, IN; Terma, North America, Inc., Arlington, VA; Rockwell Collins, Cedar Rapids, IA; Cobham, Prescott, AZ.

6. Cost. PEC: 53114F

Units Required	Unit Cost *	Program Cost
Radio NRE (3600)	N/A	\$4,300,000
72 Secure Radios (3010)	\$55,556	\$4,000,032
20 ANW2 Radios (3010)	\$38,500	\$770,000
6 Civil Band Radios (3010)	\$87,500	\$525,000
Total		\$9,595,032

*Includes 10 % spares.

HH-60G INTEGRATED FLIGHT DECK SMFCD / SADL / LARS V12

1. Background. In order to conserve valuable space and weight, a fully integrated flight deck is required to reduce crew workload and enhance mission effectiveness. Integrating the Smart Multi-Function Color Display (SMFCD), Situational Awareness Data Link (SADL) and the Lightweight Airborne Recovery System Version 12 (LARS V12) will enable the crew to quickly execute mission essential data while operating in a heavily threat laden low level environment. The HH-60 has extremely limited space to add new capabilities and is also power limited, making weight reduction a high priority. Integrating flight deck components into one easy to use system will make efficient use of limited space and will reduce redundant equipment that adds unnecessary pounds to the aircraft. Today, we still have aircraft that are unable to track and locate all survival radios in the Area of Responsibility and Continental United States during civil emergencies. New technology like the 406MHz beacon cannot be located on any HH-60. Even newer technology like the Combat Survivor Evader Locator (CSEL) cannot be located or tracked. LARS V12 will provide the capability to track and locate all survival radios in any environment. To execute the rescue mission, ANG HH-60Gs need to possess a data link and display capability (with additional processing power). The increased display and datalink capability will build crew situational awareness by providing critical digital communications and will reduce crew workload allowing the crew to focus on threats, terrain and recovery personnel outside the aircraft versus working “heads down” inside the aircraft. Integrating the LARS V12 and datalink solution into a multi-function display will reduce aircraft weight and reduce crew workload while simultaneously building crew situational awareness.

2. Source of Need. CAF MNS 315-92, Real-Time Information in the Cockpit (RTIC); Global Information Grid CRD, JROCM 134-01, 30 Aug 01; Air Force Tactical Data Link Master Plan; ACC approved 1067; ARC WEPTAC Critical Requirement.

3. Impact If Not Funded. An OTH data link capability using SADL is essential for reactive, time-critical missions that require dynamic planning and maximum flexibility in a very fluid environment. Without upgrading to the LARS V12 rescue forces will lack an exact GPS position of survivors that is supplied by the PRC-112G and the PRQ-7 survivor radios.

4. Units Impacted.

106 RQW Gabreski Field, NY 129 RQW Moffett Federal Airfield, CA 176 WG JB Elmendorf, AK

5. Contractor. Cubic Corp., San Diego, CA; Raytheon, Indianapolis, IN; Rockwell Collins, San Jose, CA; Northrop Grumman, Rolling Meadows, IL.

6. Cost. PEC: 53114F

Units Required*	Unit Cost	Program Cost
NRE (3600)	N/A	\$1,000,000
17 EPLRS Receivers/Transmitters (3010)	\$36,822	\$625,974
17 SMFCDs (3010)	\$223,529	\$3,799,993
17 LARS V12 (3010)	\$78,235	\$1,329,995
Total		\$6,755,962

*Includes 10% spares.

HH-60G HOSTILE FIRE INDICATOR WITH ENHANCED DEFENSIVE SYSTEMS SUITE

1. Background. Rescues performed in combat highlighted the need to modernize the HH-60G defensive systems. The HH-60 requires a precise, integrated defensive system that permits the aircrew to detect, counter and apply tactics to defeat threats such as small arms fire, rocket propelled grenades (RPG), man portable air defense system (MANPAD) and radio frequency (RF) guided weapons. The current method employed to detect these threats is visual detection or via radio notification from a friendly ground party. Detecting threats visually or via radio contact from a ground party is not acceptable because it takes too long for the crew to build enough information to react accordingly, or even worse, the aircrew may not be able to detect that they are taking enemy fire until it is too late. Rescue helicopters and crews have been lost due to their inability to detect and react to hostile enemy fire. Three dimensional (3D) audio capability is required to integrate with a missile warning system (MWS), hostile fire indicator (HFI), radar warning receiver (RWR) as well as communication and mission equipment. With this equipment, crews will be able to rapidly return precise and immediate defensive fire, effectively, suppressing or destroying the enemy threat, or maneuver to avoid the threat as needed.

2. Source of Need. Critical capability shortfall identified at the 2010 ARC WEPTAC; lessons learned Operations ENDURING FREEDOM (OEF) and IRAQI FREEDOM (OIF). AF Form 1067 is approved and the System Program Office (SPO) is developing an acquisition program to purchase and test this system.

3. Impact If Not Funded. There is an increased chance that Combat Search and Rescue (CSAR) HH-60G crews and aircraft will be lost to enemy hostile fire without the hostile fire indicator and enhanced defensive systems.

4. Units Impacted.

106 RQW Gabreski Field, NY 129 RQW Moffett Airfield, CA 176 WG JB Elmendorf, AK

5. Contractor. Northrop Grumman, Rolling Meadows IL; Cassidian; BAE Systems; Terma North America, Inc., Arlington, VA; Gentex, Aurora, IL.

6. Cost. PEC: 53114F

Units Required	Unit Cost	Program Cost
Defensive System NRE (3600)	N/A	\$2,000,000
Directional Audio (NRE) (3600)	N/A	\$19,200,000
17 Hostile Fire Indicator (3010)	\$279,411	\$4,749,987
108 Group C Kits (3010)	\$7,051	\$761,508
3 Unit Test Equipment (3080)	\$58,400	\$175,200
18 ALQ-213 w 3D Audio kits(3010)	\$233,333	\$4,199,994
Total		\$31,086,689

HH-60G IMPROVED/ADVANCED WEAPONS SYSTEMS

1. Background. The HH-60G has a requirement to provide reliable defensive firepower to fill the gap in coverage between the 800 meter maximum range of the currently fielded GAU-2B and the supporting fighter's Weapons Employment Zone minimum range of 1000 meters. The Fabrique Nationale Herstal GAU-21 .50 caliber machine gun is an accurate, reliable, lightweight, high rate of fire, open bolt weapon that can effectively suppress threats out to 1500 meters. Since the HH-60G routinely operates at maximum allowable gross weight, it is necessary to find weight savings whenever possible to allow addition of new capabilities such as data link and over-the-horizon communications. The Dillon Aero M134D mini-gun is an ultra-reliable, GAU-2B mini-gun replacement which provides overall weight savings.

2. Source of Need. Air Combat Command (ACC) Project 96-012A HH-60G Cabin Configuration FOT&E Final Report (U) dated April 1997 and CAF ORD 306-00-I/II/III HH-60G Block 152 (U) both state the requirement for a .50-caliber machine gun on the Rescue HH-60Gs; ACC / CENTCOM C-MNS 02-501, approved ACC GAU-21 1067.

3. Impact If Not Funded. The HH-60G fleet will continue to have an unreliable defensive capability between the maximum range of the current system and the minimum range of supporting fighters. Ability to add new capabilities to the aircraft will be hampered by excess weight of current systems.

4. Units Impacted.

106 RQW Gabreski Field, NY 129 RQW Moffett Airfield, CA 176 WG JB Elmendorf, AK

5. Contractor. FN Herstal USA Inc, McLean, VA; FN Manufacturing Inc. (FNMI), Columbia, SC; Dillon Aero, Scottsdale, AZ.

6. Cost. PEC: 53114F

Units Required *	Unit Cost	Program Cost
36 Dillon M134D Miniguns (3010)	\$66,667	\$2,400,012
36 FNH GAU-21 .50 cal Machine Guns (3010)	\$155,555	\$5,599,980
Total		\$7,999,992

* Includes NRE, Integration and T.O.s.

HH-60G HELMET MOUNTED CUEING/POINT DESIGNATION

1. Background. The addition of day and night, helmet mounted cueing and display capability in the HH-60G significantly increases aircrew situational awareness and weapons employment capability; enhances terminal area search and rescue operations; and speeds overall internal communication during critical mission phases. A helmet mounted cueing system allows all crewmembers to quickly build Situational Awareness (SA) based on other crewmember's SA without the need for voice communication. Sensor and data link symbols will be visible on the helmet mounted display superimposed over the geographic location of friendly, hostile, and survivor positions. Additionally, the ability to display sensor pictures and data link information while maintaining a heads-up posture will greatly enhance safety while flying in the low-level (<500ft) environment. Since the majority of the HH-60G mission employment occurs at night, this capability needs to be compatible with Night Vision Goggles (NVGs). The HH-60G currently has no method to develop and transmit coordinates for a location that is not directly below the aircraft. This limitation requires the crew to use voice transmissions to talk crewmembers and supporting assets onto potential landing zones, threat locations or any point of interest. The ability to designate a location on the ground that is superimposed on the helmet mounted display and generate coordinates will allow the crew to direct their navigation system directly to the point if required.

2. Source of Need. Critical requirement identified at the ARC 2011 WEPTAC; lessons learned Operations ENDURING FREEDOM (OEF) and IRAQI FREEDOM (OIF).

3. Impact If Not Funded. Heads-down time in the cockpit during low-level flight increases the chances of a mishap. For rescue operations and weapons employment, continued operation without the Helmet Mounted Cueing System (HMCS) will hamper execution and put mission success at-risk.

4. Units Impacted.

106 RQW Gabreski Field, NY 129 RQW Moffett Airfield, CA 176 WG JB Elmendorf, AK

5. Contractor. BAE Systems, Kent, UK; Gentex, Aurora, IL; Rafael, Haifa, Israel; Vision Systems International LLC, San Jose, CA; Insight Technology Inc, Manchester, NH; ITT Night Vision, Roanoke, VA; Northrop Grumman, Rolling Meadows, IL; Raytheon, Indianapolis, IN.

6. Cost. PEC: 53114F

Units Required *	Unit Cost	Program Cost
NRE (3600)	N/A	\$6,000,000
17 HMCS Aircraft Kits (3010)	\$335,294	\$5,699,998
102 HMCS Helmet Kits (3010)	\$87,843	\$8,959,986
102 Night Vision Units (3010)	\$65,882	\$6,719,964
17 Coordinate Generating Lasers (3010)	\$558,824	\$9,500,008
Total		\$36,879,956

* Includes 10% spares.



KC-135



- **Air Refueling**
- **Aeromedical Evacuation**
- **Airlift**
- **ANG KC-135 Units Provide 43% of the Total Fleet**

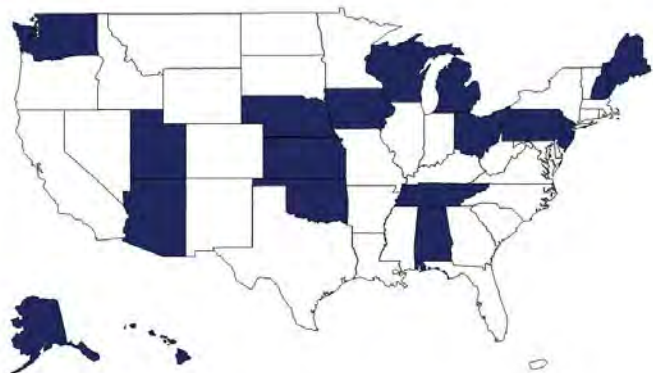
Air refueling is vital to air mobility and serves to enable and multiply the effects of airpower at all levels of warfare. The KC-135 Stratotanker is Air Mobility Command's primary platform providing approximately 88 percent of air refueling in support of US, allied, and coalition military aircraft. The KC-135 enhances air refueling capabilities and supports deployment, employment, sustainment, and redeployment of joint forces across the full range of military operations including nuclear warfare, routine military activities and irregular warfare.



In today's ever-changing environments, the KC-135 is being tasked to operate closer and closer to high threat areas. Defensive systems are necessary to prevent shoulder-fired surface-to-air-missile systems from destroying aircraft during takeoff, landing, and low altitude flight regimes.



Tactical data link technologies and situational awareness displays that bring real-time threat information as well as secure radio capability to KC-135 crewmembers are required modifications that will greatly enhance air refueling, airlift, and aeromedical evacuation missions.



KC-135

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Critical Capabilities List

- Advanced Infrared Counter Measures Defensive Systems
- Tactical Data Link and Situational Awareness Cockpit Display Units
- Fuel Tank Fire Explosion Protection
- Aircraft Ground Cooling Capability
- External Overt/Covert Lighting

Essential Capabilities List

- Boom Operator Simulation Systems (BOSS)
- Electronic Flight Bag
- Improved Cargo Compartment Lighting
- Soft basket quick connect boom drogue adapter
- Block 45 Electronic Engine Instrument Display (EEID) Integrated Handset Control Software

Desired Capabilities List

- Improved Crew Bunks
- Advanced Squadron Level Simulator (ASLS) Systems

KC-135

EXECUTIVE SUMMARY

Modernization Priority Profiles (\$ Million)

Program	2013	2014	2015
Advanced Infrared Counter Measures Defensive Systems	\$91.60 ²	\$91.40 ²	\$93.00 ²
Tactical Data Link and Situational Awareness Cockpit Display Units	\$15.00 ² \$4.00 ³	\$15.00 ² -	\$15.00 ² -
Fuel Tank Fire Explosion Protection	\$6.00 ² \$2.00 ³	\$6.00 ² -	\$6.00 ² -
External Overt/Covert Lighting	- \$1.00 ³	\$6.65 ² -	\$6.65 ² -

Notes: ¹ 3840 Appropriation ² 3010 Appropriation ³ 3600 Appropriation ⁴ 3080 Appropriation

- Advanced Infrared Counter Measures (IRCM) Defensive Systems - Provides an integral laser-based self-protection system to combat IR threats to large aircraft. Man-Portable Air Defense Systems (MANPADS) are a significant threat during takeoffs, landings, and low altitude refueling missions. An advanced IRCM system is needed to counter MANPAD threats. Existing pyrotechnic systems (flares) are incompatible with the air refueling mission because of the highly combustible fuel load and lack of tank inerting.
- Tactical Data Link and Situational Awareness Cockpit Display Units - Provides a robust, secure, and scalable Line-of-Sight and Beyond-Line-of-Sight connectivity with the network centric battlefield allowing tankers more flexibility to carry out effective operations deeper into enemy airspace. Supplies increased situational awareness to aircrew by providing critical Real-Time Information in the Cockpit.
- Fuel Tank Fire Explosion Protection - In the event a tanker is struck by a projectile, this type of protection reduces the possibility of ignition of flammable fuel vapors in the aircraft's fuel tank and increases the chances of survivability.
- External Overt/Covert Lighting - Provides Federal Aviation Administration and Military Specification compliant external lighting. Also provides covert mode to reduce mid-air collision potential during night-time blacked-out operations, and improved reliability with significantly increased Mean Time Between Failures.

KC-135 ADVANCED INFRARED COUNTERMEASURES DEFENSIVE SYSTEMS

1. Background. Changes in employment tactics are placing KC-135 aircraft in high threat areas. Low altitude refueling, forward positioning, and mission sets establishing the tanker as a command and control relay are subjecting the KC-135 to increasingly hostile operational environments. This threat environment is widely populated with shoulder fired, Man Portable Air Defense systems (MANPAD) infrared seeking missiles. MANPADs are a significant threat during takeoffs, landings, and low altitude refueling missions. An advanced Infrared Countermeasures system is needed to counter MANPAD threats; one that does not rely on pyrotechnic expendables that are incompatible with a fuel-laden aircraft, and leverages previous government investments in laser based countermeasures.

2. Source of Need. Large Aircraft Infrared Countermeasures (LAIRCM) ORD 314-92, dated Aug 98, LAIRCM Equipage Study; AMC Requirements and Planning Council ranked Defensive Systems as #2 out of 40 at the 2011 Executive Session; AF Form 1067 with AMC tracking number 10-137.

3. Impact If Not Funded. KC-135 aircraft are uniquely vulnerable to MANPAD threats due to its size, lack of maneuverability, and a large combustible fuel load. Without defensive systems, a MANPAD attack against a KC-135 has a high probability of a kill. Additionally, lack of defensive systems limits the KC-135 from operating out of forward operating bases causing increased flying time and fuel consumption thus decreasing mission effectiveness by limiting fuel available for offload.

4. Units Impacted.

101 ARW Bangor IAP, ME	128 ARW Milwaukee IAP, WI	161 ARW Phoenix IAP, AZ
108 ARW JB McGuire, NJ	134 ARW Knoxville APT, TN	168 ARW Eielson AFB, AK
117 ARW Birmingham APT, AL	151 ARW Salt Lake IAP, UT	171 ARW Pittsburgh IAP, PA
121 ARW Rickenbacker ANGB, OH	154 WG Hickam AFB, HI	185 ARW Sioux City IAP, IA
126 ARW Scott AFB, IL	155 ARW Lincoln MAP, NE	190 ARW Forbes Field, KS
127 WG Selfridge ANGB, MI	157 ARW Pease ANGB, NH	

5. Contractors. BAE Systems, Nashua NH, Lockheed Martin, Orlando FL; Elbit Systems of America, Fort Worth, TX; Northrop Grumman Electronics Systems, Rolling Meadows, IL.

6. Cost. PEC: 0401134F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$6,000,000
180 Group A Kits (3010)	\$600,000	\$108,000,000
90 Group B Kits (3010)	\$1,800,000	\$162,000,000
Total		\$276,000,000

KC-135 TACTICAL DATA LINK AND SITUATIONAL AWARENESS COCKPIT DISPLAY UNITS

1. Background. Recent combat operations have highlighted the need for comprehensive, networked Command and Control (C2) throughout all theaters of operation. Installation of a robust, secure, and scalable Tactical Data Link (TDL) provides this C2 link and maximizes KC-135 aircrew situational awareness with Beyond-Line-of-Sight and Line-of-Sight capabilities. TDL provides critical real-time information to KC-135 aircrews such as positions of other aircraft, especially those about to receive fuel and weather and threat locations, thus greatly increasing the tankers ability to effectively participate in the present day network-centric battlespace. The resulting connectivity enables C2 elements near real-time monitoring of mission events, mission status, task completion, and resource status while enhancing the situational awareness of both tanker formations and the joint and coalition aircraft involved in aerial refueling operations. A TDL capability should be compatible with any situational awareness cockpit display unit utilized by the community.

2. Source of Need. Draft annex to Tanker Operational Requirement Document (AF/A5R); Mobility Air Forces (MAF) Network Enabling Concept, 26 Apr 06; AMC MAF Data Link Integration Technical Requirements Document (TRD), 25 Oct 06; TDL Transformation CDD, Increment 1, JROCM, 23 Jun 04; AMC Requirements and Planning Council Ranked Real-Time Information in the Cockpit (RTIC)/Tanker TDL #22 out of 40 at the 2011 Executive Session; AF Form 1067 with AMC tracking number 11-143.

3. Impact If Not Funded. Without a tactical data link, ANG tanker assets will remain outside the C2 networks in the various theaters of operation and are thus unable to receive time critical tasking information and remain blind to broadcasted threats.

4. Units Impacted.

101 ARW Bangor IAP, ME	128 ARW Milwaukee IAP, WI	161 ARW Phoenix IAP, AZ
108 ARW JB McGuire, NJ	134 ARW Knoxville APT, TN	168 ARW Eielson AFB, AK
117 ARW Birmingham APT, AL	151 ARW Salt Lake IAP, UT	171 ARW Pittsburgh IAP, PA
121 ARW Rickenbacker ANGB, OH	154 WG Hickam AFB, HI	185 ARW Sioux City IAP, IA
126 ARW Scott AFB, IL	155 ARW Lincoln MAP, NE	190 ARW Forbes Field, KS
127 WG Selfridge ANGB, MI	157 ARW Pease ANGB, NH	

5. Contractors. AIRINC, Oklahoma City, OK; BAE, Boeing, Chantilly, VA; Northrop Grumman, Melbourne, FL; Rockwell Collins, Cedar Rapids, IA; L³ Communications (IS) Mission Integration Division (MID), Greenville, TX.

6. Cost. PEC: 0401218F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$4,000,000
180 Group A (3010)	\$120,000	\$21,600,000
190 TDL Radios and Processors (3010)	\$380,000	\$72,200,000
Total		\$97,800,000

KC-135 FUEL TANK FIRE EXPLOSION PROTECTION

1. Background. Changes in employment concepts are placing KC-135 aircraft in high threat areas. This threat environment is widely populated with shoulder fired, Man-Portable Air Defense Systems, Anti-Aircraft Artillery and small arms. All of these threats are significant during takeoff, landing, and low altitude operations. When struck by projectiles, tankers do have some advantages, including multiple engines and redundant flight control systems. However, fires and wing structural damage induced by fire would be enough to cause even the most resilient of these systems to fail and the aircraft destroyed. Fuel tank fire explosion protection reduces that vulnerability. Additionally, for civilian aircraft, the Federal Aviation Administration, through FAA RIN 2120-AI23 Fuel Tank Flammability Inerting sets acceptable flammability exposure values in tanks most prone to explosion or requires the installation of an ignition mitigation means in an affected fuel tank. Currently all large Air Mobility Command aircraft and Air Combat Command fighters employ this type of technology.

2. Source of Need. FAA RIN 2120-AI23 Fuel Tank Flammability Inerting.

3. Impact If Not Funded. Tankers equipped with fuel tank fire explosion protection would increase their survivability and subsequent combat effectiveness. Without this capability, any attack against a tanker has an increased probability of a kill. The amplified vulnerability limits the tanker fleet from operating from forward operating bases causing increased flying time and fuel consumption; limiting fuel available for offload and decreasing mission effectiveness.

4. Units Impacted.

101 ARW Bangor IAP, ME	128 ARW Milwaukee IAP, WI	161 ARW Phoenix IAP, AZ
108 ARW JB McGuire, NJ	134 ARW Knoxville APT, TN	168 ARW Eielson AFB, AK
117 ARW Birmingham APT, AL	151 ARW Salt Lake IAP, UT	171 ARW Pittsburgh IAP, PA
121 ARW Rickenbacker ANGB, OH	154 WG Hickam AFB, HI	185 ARW Sioux City IAP, IA
126 ARW Scott AFB, IL	155 ARW Lincoln MAP, NE	190 ARW Forbes Field, KS
127 WG Selfridge ANGB, MI	157 ARW Pease ANGB, NH	

5. Contractors. TBD.

6. Cost. PEC: 0401218F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$2,000,000
180 Fuel Tank Conversions (3010)	\$200,000	\$36,000,000
Total		\$38,000,000

KC-135 EXTERNAL OVERT/COVERT LIGHTING

1. Background. Current KC-135 exterior lighting does not meet Military Specification illumination standards. This deficiency has been highlighted during ground testing conducted by Air Force Research Lab. By replacing the existing incandescent lighting with updated Light Emitting Diode (LED) lighting, the KC-135 combat and peacetime operations benefit in three areas: safety, survivability, and sustainability. LED lighting increases safety margins by providing significantly better aircraft visual acquisition during ground and airborne operations. The covert mode will allow KC-135 crews the ability to operate “lights out” with theater requirements while allowing friendly forces using night vision devices to see the aircraft. Covert lighting drastically reduces the potential of a mid-air collision which has been highlighted as a safety concern during night operations in theater. The upgraded lighting will increase Mean Time Between Failures (MTBF) from 40 to 60 hours for incandescent bulbs to over 10,000 hours with LEDs. This significant increase in MTBF will reduce supply costs and decrease maintenance requirements.

2. Source of Need. AMC Requirements and Planning Council ranked external overt/covert lighting as #25 out of 40 at the 2011 Executive Session; AF Form 1067 with AMC tracking number 10-044.

3. Impact If Not Funded. Aircraft are vulnerable to mid-air collisions in blacked-out conditions where covert lighting would make them visible to friendly forces utilizing night vision devices. The deficient lighting also creates safety hazards in day and night operations.

4. Units Impacted.

101 ARW Bangor IAP, ME	128 ARW Milwaukee IAP, WI	161 ARW Phoenix IAP, AZ
108 ARW JB McGuire, NJ	134 ARW Knoxville APT, TN	168 ARW Eielson AFB, AK
117 ARW Birmingham APT, AL	151 ARW Salt Lake IAP, UT	171 ARW Pittsburgh IAP, PA
121 ARW Rickenbacker ANGB, OH	154 WG Hickam AFB, HI	185 ARW Sioux City IAP, IA
126 ARW Scott AFB, IL	155 ARW Lincoln MAP, NE	190 ARW Forbes Field, KS
127 WG Selfridge ANGB, MI	157 ARW Pease ANGB, NH	

5. Contractors. Support Systems Associates, Inc., Melbourne, FL; Air Force Research Lab, Wright-Patterson AFB, OH, L³ Communications (IS) Mission Integration Division (MID), Greenville, TX.

6. Cost. PEC: 0401218F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$1,000,000
190 Kits (3010)	\$70,000	\$13,300,000
Total		\$14,300,000

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Logistics



- **Homeland Defense**
- **Provide Agile and Responsive Forces**
- **Viability Through Modernization**

The Air National Guard (ANG) has a rich history in defending and protecting America's interests at home and abroad. From humble beginnings, the Air National Guard has evolved into a force that delivers one third of the Air Force's combat power and nearly one-third of our nation's airlift capability. The contributions of our citizen Airmen are without equal and provide both the State Governors and combatant commanders with a highly skilled, professional, and flexible force on a daily basis. Air National Guard maintenance professionals representing 82 flying organizations from the 54 States and Territories, generated an amazing 319,876 flying hours in support of State missions and combat sorties in support of



Operations NOBLE EAGLE, ENDURING FREEDOM, and NEW DAWN in 2011. The ANG remains committed to the necessary modernization and recapitalization of our aircraft and equipment so we may continue "Guarding America" and "Defending Freedom" each day. With limited resources, our capabilities based process focuses on identifying and bringing the right capability to the hands of the warfighter, as they proudly protect our Homeland, fight the Global War on Terrorism, and transform capabilities to meet future needs.



Logistics

2011 Weapons and Tactics Conference

Critical Capabilities List

- C-130 Isochronal (ISO) Inspection Stands
- SATCOM Radio Support Capability
- Multiple Mission Design Series (MDS) Leak Detection Capability
- Obsolete Support Equipment
- Advanced Support Equipment

Essential Capabilities List

- Armament Tester 50/60 Beer Can
- KC-135 Internal Lighting Upgrade
- Improved Wireless Integrated Maintenance Data System (IMDS)/E Tool capability
- Flight Line Shelters for Sun/Snow
- Controlled Humidity Protection (CHP)

Range Logistics

- Range safety and security and personal protection equipment sustainment
- Ground unit support and training/storage facilities
- Range tower modernization

Desired Capabilities List

- F-15 Multiplex Bus Tester
- Thermal Imaging Detection Capability
- Fall Restraint
- Hydraulic Fluid Purification
- Universal Fuel Tank/Pod Loader

LOGISTICS

EXECUTIVE SUMMARY

Modernization Priority Profiles (\$ Million)

Program	2013	2014	2015
C-130 Isochronal Inspection Stands	\$2.50 ⁴	\$2.50 ⁴	\$2.50 ⁴
SATCOM Radio Support Capability	\$0.55 ⁴	\$2.00 ⁴	\$2.00 ⁴
Multiple MDS Leak Detection Capability	\$1.00 ⁴	\$1.47 ⁴	\$2.00 ⁴
Obsolete Support Equipment	\$2.35 ⁴	\$3.00 ⁴	\$4.00 ⁴
Advanced Support Equipment	\$5.53 ⁴	\$21.00 ⁴	\$21.00 ⁴

Notes: ¹ 3840 Appropriation ² 3010 Appropriation ³ 3600 Appropriation ⁴ 3080 Appropriation

- C-130 Isochronal Inspection Stands - Enhances scheduled maintenance in hard to reach places of the aircraft.
- SATCOM Radio Support Capability - Provides necessary troubleshooting capability for advanced aircraft radio frequency systems.
- Multiple MDS Leak Detection Capability - Improves troubleshooting capabilities of any pressurized aircraft system, reducing non-mission capable time and improving aircraft availability.
- Obsolete Support Equipment - Provides replacement support equipment items to ensure continued maintenance success and long term aircraft supportability.
- Advanced Support Equipment - Enhances routine maintenance efficiency and safety, while improving maintenance capabilities and reducing overall operating costs.

C-130 ISOCHRONAL INSPECTION STANDS

1. Background. C-130 Isochronal (ISO) inspection stands no longer meet Air Force Occupational Safety and Health Administration (AFOSH) or Occupational Safety and Health Administration (OSHA) standards. Many stands currently in use are 40+ years old, require frequent maintenance actions in order to maintain serviceability, and are still critical to accomplishing periodic inspection requirements.

2. Source of Need. Critical capability shortfall identified at the 2010 and 2011 ARC WEPTAC; additionally, elevated work stands must meet OSHA standards found in 29 CFR 1910 Subpart D.

3. Impact If Not Funded. Current stands do not comply with federal or Air Force safety requirements, which is the number one concern with aging stands. They require frequent and time-consuming maintenance efforts that are re-directed from aircraft-specific tasks. Units continue to accept and manage risks required to keep aircraft flowing through the inspection process. Established workarounds delay production, effectively double inspection times, and negatively impact aircraft availability. New stands will alleviate this unneeded risk mitigation issue and allow maintainers to re-focus energy on aircraft-specific tasks.

4. Units Impacted.

106 RQW	Gabreski Field, NY	139 AW	St. Joseph, MO	166 AW	Wilmington APT, DE
109 AW	Schenectady, NY	145 AW	Charlotte IAP, NC	182 AW	Peoria APT, IL
118 AW	Nashville, TN	152 AW	Reno-Tahoe IAP, NV	189 AW	Little Rock AFB, AR
123 AW	Louisville, KY	153 AW	Cheyenne MAP, WY		
129 RQW	Moffett Airfield, CA	156 AW	San Juan IAP, PR		
133 AW	Minneapolis IAP, MN	165 AW	Savannah, GA		

5. Contractor. KWD Manufacturing, San Antonio, TX.

6. Cost. PEC: 401115F

Units Required	Unit Cost	Program Cost
15 ISO Inspection Stands (3080)	\$500,000	\$7,500,000
Total		\$7,500,000

SATCOM RADIO SUPPORT CAPABILITY

1. Background. In 2009, the A-10 and F-16 system program offices (SPO) fielded a satellite communication (SATCOM)-capable ARC-210 radio system for Air National Guard (ANG) and Air Force Reserve Command aircraft. This fielding was in response to a United States Central Command Urgent Need Request for an A-10/F-16 robust, frequency-selectable line-of-sight and beyond line-of-sight secure communications capability. Subsequently, similar combatant commander requirements to add SATCOM radio capabilities have been levied against other Air Reserve Component mission, design, and series (MDS) aircraft. SATCOM radio systems, including the ARC-210, were tested and fielded without immediate consideration for maintainability and sustainability. There is currently no fielded test equipment available for ground testing or troubleshooting specific SATCOM functionality on recently-acquired radio systems on any aircraft. Ideally, the new capability/tester should be usable for all radio systems (including SATCOM) on all ANG MDS aircraft.

2. Source of Need. Critical capability shortfall identified at the 2010 and 2011 ARC WEPTAC.

3. Impact If Not Funded. Without SATCOM radio test capability, maintainers are unable to test, troubleshoot, or repair the SATCOM radio systems currently installed on ARC aircraft. Maintainers also have very limited on-station ability to perform operational checks at home station prior to deploying or for training to meet specific unit tasking for future deployments.

4. Units Impacted. All ANG SATCOM equipped units.

5. Contractors. Aeroflex, Wichita, KS.

6. Cost. PEC: 207133F

Units Required *	Unit Cost	Program Cost
182 Testers (2 per unit) (3080)	\$25,000	\$4,550,000
Total		\$4,550,000

*Includes 10% spares.

MULTIPLE MDS LEAK DETECTION CAPABILITY

1. Background. Existing leak detection procedures employ ineffective and time-consuming methods. Available tools for these procedures have not kept up with advances in technologies that identify minute or multiple leaks. Modern leak detection equipment utilizes tracer gasses or ultrasonic sound to identify leaks in a fraction of the time compared to current methods. Compounding problems with many leak detection procedures is the lack of support equipment capable of maintaining sufficient pressure in a system to identify the leak. Currently, without this capability, technicians are required to refuel aircraft in order to determine the validity of a fuel system repair. If a leak is still noted, the aircraft must be defueled to facilitate further repairs, and then refueled again check the validity of the repair, thus creating a time-consuming cycle to resolve the discrepancy. These new detector systems utilize a tracer gas instead of fuel to identify multiple leaks in difficult areas within aircraft fuel systems. Fielding a non Mission, Design, and Series (MDS) specific leak detector, similar to that approved for use on the F-16, will improve leak detection capability and eliminate the find, fix, and repeat cycle of current fuel system repair and increase aircraft availability to meet operational requirements.

2. Source of Need. Critical capability shortfall identified at the 2011 ARC WEPTAC.

3. Impact If Not Funded. Continued lengthy troubleshooting times for fuel system and cabin/cockpit leak detection, resulting in reduced aircraft availability.

4. Units Impacted. All ANG CAF and MAF flying units.

5. Contractor. TBD.

6. Cost. PEC: 027131F

Units Required *	Unit Cost	Program Cost
153** Hydrogen leak detectors (3080)	\$29,200	\$4,467,600
Total		\$4,467,600

*Includes 10% spares.

**2 per unit minus 29 previously funded for F-16 units.

OBSOLETE SUPPORT EQUIPMENT

1. Background. Many support equipment items critical to daily operations at Air National Guard (ANG) units are quickly nearing the end of their expected life span. As they continue to age, these items will become increasingly difficult to sustain and uneconomical to repair. In many cases, the original manufacturer has either gone out of business, is unwilling to produce outdated equipment, or is unwilling to allow other sources to produce proprietary equipment. The net effect is that the ANG faces a diminishing source for manufacturing on items still required for aircraft maintenance. Replacements for the following systems need to be acquired: A-10 Fuel Quantity Tester, C-130 Engine Removal and Replacement System, and 50/60 Stray Voltage Tester. The A-10 Fuel Quantity Gull tester currently lacks a source of repair or supply, which needs to be identified, or the fielding of the PATS-70 tester needs to be accelerated to avoid critical shortfalls. Also, a vehicle mounted C-130 Engine Removal and Replacement system that is capable of performing all required tasks is needed to ensure maximum aircraft availability on a daily basis. Additionally, a replacement 50/60 tester suitable for use during deployed F-16 fighter sortie generation needs to be fielded. The tester must meet or exceed the requirements of the current unsustainable tester that is in use.

2. Source of Need. Critical capability shortfalls identified at the ARC 2011 WEPTAC.

3. Impact If Not Funded. Failure to field replacements for the identified equipment will significantly impact the Fully Mission Capability rates for the impacted fleets. In most cases, the failure to field replacements will result in aircraft grounding.

4. Units Impacted. The A-10 Fuel Quantity tester impacts all five ANG A-10 units. The C-130 Engine Removal and Replacement System impacts all 16 ANG C-130 units. The replacement 50/60 tester impacts all 28 ANG CAF (F-15/F-16/A-10) units.

5. Contractor. TBD.

6. Cost. PEC: 207133F

Units Required*	Unit Cost	Program Cost
11 A-10 Fuel Qty Testers (2 per unit) (3080)	\$278,000	\$3,058,000
18 C-130 Engine R/I (3080)	\$180,000	\$3,240,000
122 50/60 Testers (4 per unit) (3080)	\$25,000	\$3,050,000
Total		\$9,348,000

*Includes 10% spares.

ADVANCED SUPPORT EQUIPMENT

1. Background. Current maintenance operations require the use of equipment based on technology from the 1970s and 1980s. Legacy equipment is cumbersome to use, expensive to operate, and often produces significant safety concerns. Procurement of devices that enhance maintenance efficiency and safety, while improving capabilities, will ultimately lead to improved aircraft availability, diminished operating costs, and enhanced agile combat support capabilities. Procurement of an alternative tow vehicle will utilize new technology to provide improved maneuverability and visibility during towing operations resulting in better utilization of hanger space, as well as improved sheltering of aging aircraft. This item is intuitive to operate and requires less time to position aircraft which decreases man-hours, enhances operational safety, and reduces current deployment footprint. Procurement of digital x-ray systems will enhance crack detection and timely diagnosis of aircraft structural health. Digital media simplifies preparation procedures and expedites coordination for approval of repair actions. Digital x-ray capability will also moderate expenses while eliminating production of hazardous materials associated with current wet-film x-rays. This critical capability will lead to improved aircraft availability, fleet longevity, and technician safety. Procurement of the VXI-based mid-life upgrade for the Improved Avionics Intermediate Shop (IAIS) will update electronics, rectify diminishing manufacturing source issues, and extend the useful life to 2030. This upgrade is projected to result in more than \$85M avoidance in IAIS sustainment costs, improve reliability by 37%, and contribute to an average \$48 million annual Consolidated Asset Management (CAM) cost avoidance (CAM cost avoidance relates to line replaceable unit exchange costs that flying units avoid by having IAIS stations and base repair capability).

2. Source of Need. Critical capability shortfalls identified at ARC 2011 WEPTAC.

3. Impact if Not Funded. Failure to field replacements that rely on advanced technologies will adversely impact the ability to ensure longevity of our aging fleets in a safe and efficient manner.

4. Units Impacted. Digital x-ray systems will be fielded at all ANG flying units. The alternative tow vehicle will be used at all ANG Combat Air Force units. The VXI-IAIS systems would be fielded to all ANG F-16 and A-10 units.

5. Contractors. TBD.

6. Cost. PEC: 207133F

Units Required	Unit Cost	Program Cost
27 Alternative Tow Vehicles (3080)	\$160,000	\$4,320,000
183* Digital X-Ray Sets (3080)	\$80,000	\$14,640,000
19 VXI-IAIS Upgrade Kits (3080)	\$1,503,699	\$28,570,281
Total		\$47,530,281

*Includes 10% spares.



ISR



- **Intelligence Surveillance and Reconnaissance (ISR)**
- **Multi-Discipline Intelligence Collection**
- **Distributed Common Ground System**

The U.S. intelligence community calls upon Air National Guard (ANG) airborne manned reconnaissance assets to fill critical ISR requirements. These ANG resources for ISR operations are called upon to support Combatant Commanders (COCOM) in their Areas of Responsibility (AORs) for Overseas Contingency Operations (OCO).

C-130 SENIOR SCOUT

Senior Scout provides the USAF's premiere, medium altitude, signals intelligence capability supporting Army, Marines, and Special Forces. The program requires critical system upgrades to ensure continued direct tactical support to troops-in-contact. Senior Scout is operated by the 169th Intelligence Squadron (UT ANG) and can be carried on any C-130E/H model aircraft.

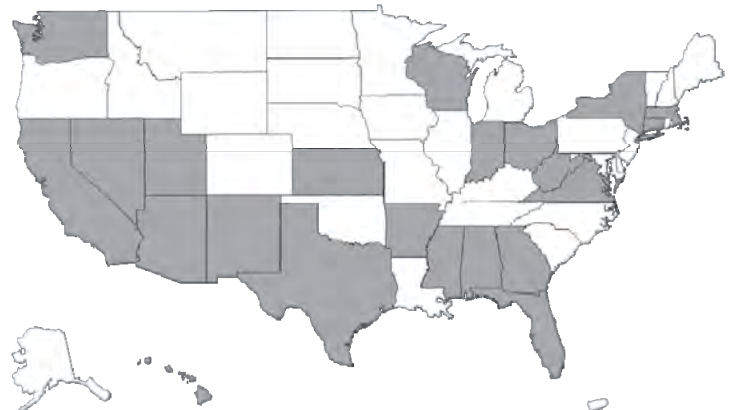


RC-26B "CONDOR"

The RC-26B is a manned ISR platform providing day/night full motion video for ISR requirements with two aircraft versions (Block 20, 25). The RC-26B is a Limited Supply, High Demand (LS/HD) platform that operates both CONUS and OCONUS. For Overseas Contingency Operations (OCO), it supports a variety of COCOMs to include U.S. Central Command and U.S. Special Operations Command. Modernization capabilities will move toward a common aircraft configuration (Block 30), and better equip the platform with net-centric capabilities mandated by the battle space environment. Eleven aircraft are attached to eleven units from three commands (ACC, AMC, AETC) throughout the United States (AL, AZ, CA, FL, MS, NM, NY, TX, WA, WI, and WV), and one provisional training unit currently operated for OCO training.

DISTRIBUTED COMMON GROUND SYSTEM

The Air Force Distributed Common Ground System (AF DCGS), designated the AN/GSQ-272 Sentinel, is a global, network-centric, intelligence, surveillance, and reconnaissance (ISR) weapon system responsible for the Processing, Exploitation, and Dissemination (PED) of intelligence data from airborne, national, and commercial reconnaissance platforms and sensors. Primary ISR sources include the U-2, RQ-4, and MQ-1/9. AF DCGS is a single weapon system conducting worldwide ISR operations from "reach-back" locations in AL, AR, CA, GA, HI, IN, KS, MA, NV, OH, TX, UT, and VA.



Intelligence, Surveillance, and Reconnaissance (ISR) 2011 Weapons and Tactics Conference

Critical Capabilities List

RC-26B:

- Mission Management System (MMS)
- Avionics Modernization
- Communications Suite (BLOS/LOS FMV/ Data Downlink SADL/V-sys)
- Dual Sensor Capability
- Late Generation Supportable Self Protection System (SPS)

SENIOR SCOUT:

- Receiver Modernization
- Multi-Beam Phased Array Antenna
- Rip & ID of Pre-detection Recordings (RIPR)
- High Frequency Communication Geolocation
- SKYHAWK Copy

DISTRIBUTED COMMON GROUND SYSTEM (DCGS):

- Fully Integrated Suite of AFSOC mission Support Equipment and Software Loads
- Distributed Ground System (DGS) Ability to Generate Near/Real-Time CAT I/CAT II Coordinates

Essential Capabilities List

RC-26B:

- Increased A/C Performance
 - Additional Sensor Capability
- ### **SENIOR SCOUT:**
- Direction Finding (DF) Calibration Tool Integration
 - CAMELHAIR Next Generation
 - Flight Deck Situational Awareness

Desired Capabilities List

RC-26B:

- Weapons Provisioning

SENIOR SCOUT:

- Special Signals Operator Post Mission Processing Station
- High Frequency Mission Radio Replacement
- Situational Awareness Imagery Ground Server

ISR

EXECUTIVE SUMMARY

Modernization Priority Profiles (\$ Million)

Program	2013	2014	2015
RC-26B			
Mission Management System (MMS)	\$1.02 ² \$1.50 ³	\$3.34 ² -	\$3.34 ² -
Avionics Modernization	\$5.02 ² \$4.50 ³	\$9.56 ² -	\$7.16 ² -
Communications Suite (BLOS/LOS FMV/Data Downlink SADL/V-sys)	\$2.12 ² \$1.20 ³	\$3.32 ² -	\$2.48 ² -
Dual Sensor Capability	\$1.69 ² \$1.75 ³	\$3.44 ² -	\$2.62 ² -
Late Generation Supportable Self Protection System (SPS)	\$3.10 ² \$0.60 ³	- -	- -
Senior Scout			
Receiver Modernization	\$1.72 ² \$2.61 ³	- -	- -
Multi-Beam Phased Array Antenna	\$3.92 ² \$1.26 ³	- -	- -
Rip & Identification of Pre-detection Recordings (RIPR)	\$0.56 ² \$3.26 ³	- -	- -
High Frequency Communication Geolocation	\$2.96 ² \$1.38 ³	- -	- -
SKYHAWK Copy	\$1.20 ² \$3.20 ³	- -	- -
DCGS			
DGS Fully Integrated Suite of AFSOC Mission Support Equipment and Software Loads	\$3.15 ⁴	-	-
DGS Ability to Generate Near/Real-Time CAT I/CAT II Coordinates	\$0.90 ³	-	-

Notes: ¹ 3840 Appropriation ² 3010 Appropriation ³ 3600 Appropriation ⁴ 3080 Appropriation

RC-26B

- Mission Management System (MMS) - Replaces obsolete and unsustainable mission management system for aircraft sensors.
- Avionics Modernization - Replaces obsolete and unsustainable avionics.
- Communications Suite (BLOS/LOS FMV/Data Downlink SADL/V-sys) – Provides operational mission communications, tactical data-link, and Beyond-Line-of-Sight, late generation voice and data capability keeping the platform relevant for Federal and State operations.
- Dual Sensor Capability - Provides multi sensor capability allowing improved mission flexibility and success to meet COCOM requirements.

- Late Generation Supportable Self Protection System (SPS) - Provides new SPS system that is sustainable and enhances missile detection in threat environments.

SENIOR SCOUT

- Receiver Modernization - Provides Senior Scout with improved COMINT capability to search for, detect and characterize new low power conventional and spread spectrum radio signals at extended stand-off ranges in the presence of interference.
- Multi-Beam Phased Array Antenna - Provides a specialty antenna for both transmit and receive capability and will be optimized to operate in multiple Radio Frequency (RF) bands with simultaneous independent steerable beams for each frequency band.
- Rip & Identification of Pre-detection Recordings (RIPR) - Allows SENIOR SCOUT to detect signals in and out of a wideband recording, identify the detects and deliver the data to system data storage by their identification or non-identification.
- High Frequency (HF) Communication Geolocation - Allows SENIOR SCOUT operators to identify HF communications, determine signal type, collect and geolocate the signals of interest.
- SKYHAWK Copy - Improves SENIOR SCOUTS Communication Intelligence (COMINT) signals internals capability to exploit new and modern low power LPI radio signals at extended stand-off ranges in the presence of interference.

DCGS

- Fully Integrated Suite of AFSOC mission Support Equipment and Software Loads - Provides ANG DCGS with the capability to properly and effectively process, exploit and disseminate information for USSOCOM Tier 1 and Tier 2 missions.
- DGS Ability to Generate Near/Real-time CAT I/CAT II Coordinates - Provides the ability to rapidly generate accurate CAT-I coordinates to disseminate to ground forces within area of operations.

RC-26B MISSION MANAGEMENT SYSTEM

1. Background. RC-26B Integrated Situational Awareness Display System (ISADS) avionics is outdated, obsolete, and unsustainable due to out-dated technology and replacement parts availability with no substitutes available. Current mission requirements for ANG RC-26B operations require comprehensive integrated sensors capabilities throughout all theaters of operation including domestic operations. As a threshold, the RC-26B requires an increased level of integration between digital combat sensors and communication equipment via Mission Management System (MMS) console operations. Basic system requirements include the following system capabilities: software control of two discrete Electro Optical sensor systems, real-time data sharing and networking, independent panel controls, integrated mission radio software control, Mission Sensor Operator station dual monitors, lightweight equipment racks, Situational Awareness Data Link, Input / Output ports, Harris High Power Waveform and PRC-117G integration. The MMS is a key component of a common fleet configuration. RC-26B aircraft need improved, modern, and more reliable MMS equipment to execute Combat Commanders combat missions and directly support Northern Command and domestic civil authorities in a wide range of mission areas.

2. Source of Need. AF Form 1067, Submitted 26 October 2009.

3. Impact If Not Funded. The impacts to mission success includes: failed intelligence gathering, aborted missions, decreased communication ability, information incompatibility, inability to efficiently operate in the dynamic, multi sensor Intelligence Surveillance and Reconnaissance/Incident Awareness and Assessment mission area, and increased cost to maintain aircraft systems and Special Mission Equipment.

4. Units Impacted.

115 FW	Truax Field, WI	144 FW	Fresno, CA	174 FW	Syracuse, NY
125 FW	Jacksonville, FL	147 RW	Ellington, TX	186 ARW	Meridian, MS
130 AW	Charleston, WV	150 FW	Kirtland AFB, NM	187 FW	Dannelly Field, AL
141 ARW	Fairchild AFB, WA	162 FW	Tucson, AZ	745 SOS (P)	Hurlburt Field, FL

5. Contractor. TBD.

6. Cost. PEC: 502889F

Units Required	Unit Cost	Program Cost
NRE (3010)	N/A	\$1,500,000
11 Shipset Kits (3010)	\$700,000	\$7,700,000
Total		\$9,200,000

RC-26B AVIONICS MODERNIZATION

1. Background. RC-26B Avionics are obsolete and unsustainable due to parts being out of production, no replacement parts or substitutes available, or parts that are no longer serviced. Specifically, these parts are the Global Positioning System Antenna, Autopilot #1 T-Bar Relay, Autopilot #2 T-Bar Relay, Electronic Flight Information System 10 Display, Radio Altimeter, Pilot's Altimeter, KNS 660 Flight Management System, and KLN 670 GPS. The RC-26B does not have FM immunity on any of its navigation radios. A minimum of one Instrument Landing System, one VHF Omni-Directional Radio-Range (VOR), and Tactical Air Navigation receiver is required to be FM immune. A new FMS will reduce pilot workload, enhance safety, and make the RC-26 Communication Navigation Surveillance/Air Traffic Management compliant. Replacement of these parts will ensure the RC-26B is compliant with Federal Aviation Administration and International Civil Aviation Organization mandates and can continue to operate in US and European airspace.

2. Source of Need. AF Form 1067, 10 Nov 2009; FAA and ICAO Requirements.

3. Impact If Not Funded. If avionics modernization is not funded the weapon system will eventually become obsolete due to diminishing material supplies and the inability to fly under regulatory mandates. Failure of any single part would effectively ground an aircraft indefinitely. FM Immunity is required to ensure safe operation of aircraft when flying terminal area approaches to prevent a mishap and possible Controlled Flight into Terrain.

4. Units Impacted.

115 FW	Truax Field, WI	144 FW	Fresno, CA	174 FW	Syracuse, NY
125 FW	Jacksonville, FL	147 RW	Ellington, TX	186 ARW	Meridian, MS
130 AW	Charleston, WV	150 FW	Kirtland AFB, NM	187 FW	Dannelly Field, AL
141 ARW	Fairchild AFB, WA	162 FW	Tucson, AZ	745 SOS (P)	Hurlburt Field, FL

5. Contractor. TBD.

6. Cost. PEC: 502889F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$4,500,000
11 Shipset Kits (3010)	\$1,980,000	\$21,780,000
Total		\$26,280,000

RC-26B COMMUNICATIONS SUITE

1. Background. There are currently two configurations of the RC-26B (A Block 20 domestic and a Block 25 Overseas Contingency Operations). Both have different communication configurations. This makes training, currency and employment problematic. Both configurations' communication architecture have become limited in capability for combat and domestic operations due to the advance of technologies and are rapidly making the weapon system obsolete. Radio and communication equipment has never been fully operable in either configuration. Both configurations do not transmit or receive Positive Position Locating Information for Link-16 or Situational Awareness Data Link (SADL), reducing mission effectiveness. Air and ground tracks, location of friendly forces, as well as Sensor Point of Interest need to be transmitted to the network and displayed in the RC-26B mission system. Expected result is to be able to maintain increased operational Situational Awareness and enable platform-to-platform data via exchange and sensor slewing. A communications suite to include Beyond-Line-of-Sight, VORTEX, and voice and data communications through late generation tactical radios capable across the full spectrum of current domestic and Overseas Contingency Operations requirements is critical. The RC-26B Communications Suite modification is intended to keep-pace with late generation technology, mission requirements, and expanding operational capabilities. The RC-26B Communications suite modification will provide operational and mission communications, tactical data-link, and Beyond-Line-of-Sight, late generation voice and data capability keeping the platform viable for domestic and overseas operations. As mission needs develop, the RC-26B will require adaptable communication capabilities.

2. Source of Need. AF Form 1067, 15 Nov 2009.

3. Impact If Not Funded. Without comprehensive full spectrum communication that is fully operable the RC-26B will not be fully mission capable in combat or domestic operations. Aircraft need to be data link capable for safety and interoperability. Without reliable voice communication and data link the potential for target misidentification and fratricide exists.

4. Units Impacted.

115 FW	Truax Field, WI	144 FW	Fresno, CA	186 ARW	Meridian, MS
125 FW	Jacksonville, FL	147 RW	Ellington, TX	187 FW	Dannelly Field, AL
130 AW	Charleston, WV	150 FW	Kirtland AFB, NM	174 FW	Syracuse, NY
141 ARW	Fairchild AFB, WA	162 FW	Tucson, AZ	745 SOS (P)	Hurlburt Field, FL

5. Contractor. TBD.

6. Cost. PEC: 502889F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$1,200,000
11 Shipset Kits (3010)	\$720,000	\$7,920,000
Total		\$9,120,000

RC-26B DUAL SENSOR CAPABILITY

1. Background. RC-26B weapon system is rapidly not meeting established Combatant Commanders (COCOM) requirements by having only single sensor capability. Most all manned U.S. Intelligence Surveillance and Reconnaissance (ISR) assets have at least two sensors. Dual sensor capability is mandated by the current COCOMs and using commands as a minimum capability. Without dual sensor capability the RC-26B is rapidly becoming irrelevant for COCOM operations. A single sensor can only provide limited efficiency, capability, and no mission redundancy to Northern Command and Domestic Operations (DOMOPS) where often only one platform is available. In addition, the fleet consists of two dissimilar sensor configurations. Block 25 carries a different sensor than Block 20 aircraft. Current budget constraint mandates efficient platform capability that must include dual sensors and/ or configurable operator capabilities to meet any real time intelligence contingency for both Overseas Contingency Operations (OCO) and DOMOPS. The airframe itself is very capable and with this sensor sustainment effort could fill ISR resource gaps for combat and domestic operations. Impacts to mission success includes: failed intelligence gathering, lack of flexibility for current intelligence architecture elements, decreased ability for over watch, lack of sensor redundancy which in turn jeopardizes safety of ground forces, civil support authorities, and law enforcement.

2. Source of Need. AF Form 1067; SOCOM Critical Capabilities Document.

3. Impact If Not Funded. Not fielding will reduce the RC-26B weapon system to efficiently and effectively operate in the dynamic multi-sensor ISR/Incident Awareness and Assessment (IAA) environment that is essential for the current battle space. The overall impact to mission success includes the RC-26B becoming irrelevant in a Net Centric Special Operation and domestic missions.

4. Units Impacted.

115 FW	Truax Field, WI	144 FW	Fresno, CA	174 FW	Syracuse, NY
125 FW	Jacksonville, FL	147 RW	Ellington, TX	186 ARW	Meridian, MS
130 AW	Charleston, WV	150 FW	Kirtland AFB, NM	187 FW	Dannelly Field, AL
141 ARW	Fairchild AFB, WA	162 FW	Tucson, AZ	745 SOS (P)	Hurlburt Field, FL

5. Contractor. TBD.

6. Cost. PEC: 502889F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$1,750,000
5 Shipset Kits (3010)	\$1,550,000	\$7,750,000
Total		\$9,500,000

RC-26B LATE GENERATION SUPPORTABLE SELF PROTECTION SYSTEM (SPS)

1. Background. The ANG RC-26B aircraft is a Limited Supply High Demand manned Intelligence, Surveillance, and Reconnaissance (ISR), Incident Awareness and Assessment (IAA) aircraft that distributes critical tactical and intelligence information to the war fighter. It can be tasked to operate worldwide in high threat environments where Man-Portable Air Defense System (MANPAD) infrared-seeking missiles are widely available. This threat is significant during take-offs and landings. To counter MANPAD threats, the RC-26B requires a missile warning countermeasures system that has a very high probability of detecting a missile launch as well as displays low false alarm rates. The five Block 20 aircraft are not currently configured with any SPS system. In order to bring the fleet into a common configuration, existing late generation government owned AN/AAR-47 A(V)2 Self Protection System (SPS) equipment need to be installed on the Block 25 aircraft and full SPS to include dispensing systems and wiring are critical to be installed on the Block 20 aircraft. This upgrade will provide acceptable probabilities of detection, reduced false alarms rates, and sustainability for current and all future worldwide operations for the entire RC-26B fleet.

2. Source of Need. AF Form 1067, 29 Mar 2011.

3. Impact If Not Funded. If SPS is not funded the current system will become obsolete resulting in increased risk in a threat environment and/or potential loss of personnel and equipment.

4. Units Impacted.

115 FW	Truax Field, WI	144 FW	Fresno, CA	174 FW	Syracuse, NY
125 FW	Jacksonville, FL	147 RW	Ellington, TX	186 ARW	Meridian, MS
130 AW	Charleston, WV	150 FW	Kirtland AFB, NM	187 FW	Dannelly Field, AL
141 ARW	Fairchild AFB, WA	162 FW	Tucson, AZ	745 SOS (P)	Hurlburt Field, FL

5. Contractor. TBD.

6. Cost. PEC: 502889F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$600,000
5 Shipset Kits (3010)	\$620,000	\$3,100,000
Total		\$3,700,000

SENIOR SCOUT RECEIVER MODERNIZATION

1. Background. SENIOR SCOUT is an airborne tactical, low profile, Signals Intelligence system consisting of a roll-on roll-off “shelter” that fits into a slightly modified C-130E/H providing direct tactical support the Army, Marines, and Special Operation Forces. SENIOR SCOUT supports theater and national level consumers with Near Real-Time (NRT) on-scene SIGINT collection, analysis, geo-location and dissemination capabilities. There is an immediate need to add improved Communication Intelligence (COMINT) capability to search for, detect and characterize new and modern low power conventional and spread spectrum radio signals at extended stand-off ranges in the presence of interference. The current systems are not able to detect these specific signal sets, which limits intelligence collection capabilities. This effort will provide a single, small form factor, airborne unit which can detect and characterize the UHF / VHF, low power modern signals resulting in a system that can be directly extended to perform carrier demodulation and exploitation of these modern signals.

2. Source of Need. Tactical Air Force/Electronic Security Command Statement of Need 1-83; Network Centric Collaborative Targeting requirements as pertains to wideband reachback capability; Operational Requirements Document, Air Force Command and Control Intelligence, Surveillance, and Reconnaissance Center 002-88-I/II/III-a, 9 May 99; Capabilities Review and Risk Assessment (CRAA) issue #22, ISR Sensor Capabilities, CRAA issue #30, ISR - Characterization of Electromagnetic Environment; Integrated Priority List #1 for CENTCOM and SOUTHCOM.

3. Impact If Not Funded. Without this capability, the SENIOR SCOUT’s ability to detect and collect advance modern communication system will be limited.

4. Unit Impacted.

169 IS Salt Lake City, UT

5. Contractors. Lockheed-Martin Integrated Systems and Solutions, Littleton, CO.

6. Cost. PEC: 53115F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$2,610,000
4 Ship Sets (B-Kits, Install, and Flight Test) (3010)	\$430,000	\$1,720,000
Total		\$4,330,000

SENIOR SCOUT MULTI-BEAM PHASED ARRAY ANTENNA (BEAMFORMER)

1. Background. SENIOR SCOUT is an Airborne tactical, low profile, Signals Intelligence (SIGINT) system consisting of a Roll-On/Roll-Off “shelter” that fits into a slightly modified C-130E/H providing direct tactical support to the Army, Marines, and Special Operation Forces. SENIOR SCOUT supports theater and national level consumers with Near Real Time on-scene SIGINT collection, analysis, geo-location and dissemination capabilities. There is an immediate need to add improved Communications Intelligence (COMINT) collection capability to search for, detect and characterize new and modern low power conventional and spread spectrum radio signals at extended stand-off ranges in the presence of interference. The current antenna systems are not able to detect these specific signal sets, which limits intelligence collection capabilities. The BEAMFORMER specialty antenna, providing both transmit and receive capability, will be optimized to operate in the Radio Frequency bands from 400-500MHz, 800-1000MHz and 1700-2100MHz with simultaneous independently steerable beams for each frequency band. The array will provide simultaneous coverage on both sides of the aircraft with independently steerable beams. The antenna will be designed to fit into a modified C-130 wing mounted fuel tank, and meet all performance requirements and environmental factors of the C-130E, H and J model aircraft when installed in the fuel tank.

2. Source of Need. Tactical Air Force/Electronic Security Command Statement of Need 1-83; Network Centric Collaborative Targeting requirements as pertains to wideband reachback capability; Operational Requirements Document, Air Force Command and Control Intelligence, Surveillance, and Reconnaissance Center (AFC2ISRC), 002-88-I/II/III-a, 9 May 99; Capabilities Review and Risk Assessment (CRAA) issue #22, ISR Sensor Capabilities, CRAA issue #30, ISR – Characterization of Electromagnetic Environment; Integrated Priority List #1 for CENTCOM and SOUTHCOM.

3. Impact If Not Funded. Without this capability, the SENIOR SCOUT’s ability to detect and collect advance modern communication system in a dense signal environment will be limited.

4. Unit Impacted.

169 IS Salt Lake City, UT

5. Contractors. Lockheed-Martin Integrated Systems and Global Solutions, Littleton, CO; L3 Communications, Rockwall, TX.

6. Cost. PEC: 53115F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$1,260,000
4 B-Kits, Install, and Flight Test (3010)	\$980,000	\$3,920,000
Total		\$5,180,000

SENIOR SCOUT RIP AND IDENTIFICATION OF PRE-DETECTION RECORDINGS (RIPR)

1. Background. SENIOR SCOUT is an Airborne tactical, low profile, Signals Intelligence (SIGINT) system consisting of a Roll-On/Roll-Off “shelter” that fits into a slightly modified C-130E/H providing direct tactical support to the Army, Marines, and Special Operation Forces. SENIOR SCOUT supports theater and national level consumers with Near Real Time on-scene SIGINT collection, analysis, geo-location and dissemination capabilities. Current SENIOR SCOUT operations require the capability to detect signals in a wideband recording, select the signal detection out of a wideband recording, identify the detects, and deliver the data to system data storage by their identification or non-identification. Files in the directories will then be processed through a logical series of processing, categorization, and evaluation. The collected energy will also be used for cooperative geo-location after which sorting and further processing and/or analysis may occur. When analytical processing and evaluation is complete, some data and metadata will be tagged and used for mission simulation purposes. Computer controlled interfaces will allow these collection assets to be integrated with existing platform tool suites providing platform operators with seamless capabilities. This effort will procure, integrate and implement the new RIPR capability into the SENIOR SCOUT shelters.

2. Source of Need. Tactical Air Force/Electronic Security Command Statement of Need 1-83; Operational Requirements Document, Air Force Command and Control Intelligence, Surveillance, and Reconnaissance Center 002-88-I/II/III-a (9 May 99); Capabilities Review and Risk Assessment (CRAA) issue #22, ISR Sensor Capabilities; CRAA issue #35, ISR – Processing and Exploitation to support Dynamic Targeting.

3. Impact If Not Funded. SENIOR SCOUT’s ability to cull through the mass of signals collected will be limited, thereby reducing the ability to provide complete picture of the threat environment.

4. Unit Impacted.

169 IS Salt Lake City, UT

5. Contractors. Lockheed-Martin Integrated Systems and Global Solutions, Littleton, CO.

6. Cost. PEC: 53115F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$3,260,000
4 B-Kits, Install and Flight Test (3010)	\$140,000	\$560,000
Total		\$3,820,000

SENIOR SCOUT HIGH FREQUENCY COMMUNICATION GEOLOCATION

1. Background. SENIOR SCOUT is an airborne tactical, low profile, Signals Intelligence (SIGINT) system consisting of a Roll-On/Roll-Off “shelter” that fits into a slightly modified C-130E/H providing direct tactical support to the Army, Marines, and Special Operation Forces. SENIOR SCOUT supports theater and national level consumers with Near Real Time on-scene SIGINT collection, analysis, geo-location and dissemination capabilities. The High Frequency (HF) radio communication geolocation capability will allow SENIOR SCOUT operators to identify HF communications, determine signal type, collect and geolocate the signals of interest. As new advance communication systems are fielded, SENIOR SCOUT operators are constrained in their ability to provide adequate force protection information to troops on the battlefield. In order to provide optimized support, the SENIOR SCOUT platform requires new HF collection subsystems with high performance capabilities for computer controlled search in order to determine location of sources. Computer controlled interfaces will allow these collection assets to be integrated with existing platform tool suites providing platform operators with seamless capabilities. This effort will procure, integrate and implement the new HF geolocation subsystem into the SENIOR SCOUT shelters.

2. Source of Need. Tactical Air Force/Electronic Security Command Statement of Need 1-83; NCCT requirements as pertains to wideband reachback capability; Operational Requirements Document (ORD), Air Force Command and Control Intelligence, Surveillance, and Reconnaissance Center 002-88-I/II/III-a (9 May 99); Capabilities Review and Risk Assessment (CRAA) issue #22, ISR Sensor Capabilities; CRAA issue #35, ISR – Processing and Exploitation to support Dynamic Targeting.

3. Impact If Not Funded. SENIOR SCOUT’s ability to detect and track friendly forces in relationship to the threat environment will be limited.

4. Unit Impacted.

169 IS Salt Lake City, UT

5. Contractors. Lockheed-Martin Integrated Systems and Global Solutions, Littleton, CO.

6. Cost. PEC: 53115F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$1,380,000
4 B-Kits, Install and Flight Test (3010)	\$740,000	\$2,960,000
Total		\$4,340,000

SENIOR SCOUT SKYHAWK COPY

1. Background. SENIOR SCOUT is an airborne tactical, low profile, Signals Intelligence (SIGINT) system consisting of a roll-on roll-off shelter that fits into a slightly modified C-130E/H providing direct tactical support to Army, Marines, and Special Operation Forces. SENIOR SCOUT provides theater and national level consumers with Near Real-Time on-scene SIGINT collection, analysis, geo-location and dissemination capabilities. There is an immediate need to add improved Communication Intelligence (COMINT) signals internals capability to exploit new and modern low power Low Probability of Intercept (LPI) radio signals at extended stand-off ranges in the presence of interference. The current SkyHawk systems are currently able to detect, identify and support geo-location of these emitters, but are not able to exploit the actual communication channel information, which limits intelligence collection capabilities. This effort will provide an upgrade to the existing SkyHawk systems to permit a full COMINT Signals exploitation system for VHF/UHF band.

2. Source of Need. Tactical Air Force/Electronic Security Command Statement of Need 1-83; Network Centric Collaborative Targeting requirements as pertains to wideband reachback capability; Operational Requirements Document, Air Force Command and Control Intelligence, Surveillance, and Reconnaissance Center, 002-88-I/II/III-a, 9 May 99; Capabilities Review and Risk Assessment (CRAA) issue #22, ISR Sensor Capabilities, CRAA issue #30, ISR – Characterization of Electromagnetic Environment; Integrated Priority List #1 for Central Command and Southern Command.

3. Impact If Not Funded. Without this capability, the SENIOR SCOUT's ability to exploit advanced modern communication systems will be limited.

4. Unit Impacted.

169 IS Salt Lake City, UT

5. Contractors. Lockheed-Martin Integrated Systems and Global Solutions, Littleton, CO; L3 Communication Systems-East, Camden, NJ.

6. Cost. PEC: 53115F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$3,200,000
4 B-Kits, Install, and Flight Test (3010)	\$300,000	\$1,200,000
Total		\$4,400,000

DISTRIBUTED COMMON GROUND SYSTEM (DCGS) FULLY INTEGRATED SUITE OF AFSOC SUPPORT EQUIPMENT AND SOFTWARE LOADS

1. Background. ANG AF Distributed Common Ground Systems lacks the capability to adequately support United States Special Operations Command (USSOCOM) tasked Full Motion Video (FMV) missions. The current systems configuration is not robust or reliable enough to support USSOCOM requirements. To support today's fast-paced tactical missions, and avoid the software limitations imposed by the current architecture, ANG DCGS analysts are forced to place increasing reliance on workarounds and supplemental systems. This use of multiple systems has lead to task saturation, making it difficult for our ANG DCGS Units to meet the stringent timelines required by USSOCOM forces. With ANG DCGS slated to receive a 70 percent increase in USSOCOM taskings within the next nine months, it's paramount to adopt the same proven FMV system currently employed by Air Force Special Operations Command (AFSOC). This system would reduce complexity, interface seamlessly with existing architecture, and offer enhanced support to both Conventional and Special Forces Ground Commanders, by improving production timelines and providing a much needed proven data archival/retrieval capability. Additionally, integration into the Special Operations voice/data networks is essential to providing threat warning information and maintaining situational awareness for DCGS analysts. Adoption of the AFSOC FMV system would provide ANG AF DCGS Units with the tools to achieve mission success.

2. Source of Need. Meet USSOCOM Process Exploit Disseminate (PED) timeline requirements while executing USSOCOM, Air Force Intelligence Surveillance Reconnaissance Agency, AFSOC and 480th Intelligence Wing mission tasking(s) of ANG DCGS units.

3. Impact If Not Funded. ANG DCGS units will be unable to properly, and effectively PED USSOCOM Tier 1 and Tier 2 missions. Failure of these missions could jeopardize the safety of US forces, and given their high importance, bring unnecessary publicity to the US Government.

4. Units Impacted.

101 IS	Otis ANGB, MA	123 IS	Little Rock AFB, AR	161 IS	McConnell AFB, KS
117 IS	Birmingham, AL	137 IS	Terre Haute, IN	152 IS	Reno IAP, NV

5. Contractors. TBD.

6. Cost. PEC: 5031174F

Units Required	Unit Cost	Program Cost
7 DCGS-A Suites (3080)	\$450,000	\$3,150,000
Total		\$3,150,000

DISTRIBUTED COMMON GROUND SYSTEM (DCGS) ABILITY TO RAPIDLY GENERATE CAT-I COORDINATES

1. Background. Until recently, Target Location Error (TLE) efforts have focused primarily on getting the proper coordinates to Global Positioning Satellite aided weapons. However, it is just as important to provide TLE information to Fixed Wing, Remotely Piloted Aircraft, and ground forces as rapidly as possible. When shooters or DCGS units report Improvised Explosive Device (IED) locations or potential targets without supplying Category (CAT)-I coordinates, ground teams have a difficult time finding the suspect IED or target. The ability for DCGS units to generate accurate coordinates within seconds rather than minutes is crucial to locating IEDs and assisting ground commanders to make critical operational decisions in a timely manner. Due to inherent biased errors from platform sensors, DCGS units require a consistent, easily understood, and rapid method to generate CAT-1 coordinates to disseminate to ground forces and Counter-IED teams in their area of operation. The overall intent is to provide an already available tool to DCGS units to rapidly and accurately generate CAT-1 coordinates, thereby reducing TLE effects.

2. Source of Need. ARC 2011 WEPTAC Critical Requirement.

3. Impact If Not Funded. Erroneous coordinates accompanying an initial report of a thermal signature or potential target from DCGS units, or the DCGSs inability to generate these coordinates in a rapid method, degrade the chances of ground teams successfully locating IEDs or targets in an urban environment. In addition, it will reduce the possibility of potential ambushes to IED teams or ground forces operating in an already lethal area.

4. Units Impacted.

101 IS Otis ANGB, MA	123 IS Little Rock AFB, AR	161 IS McConnell AFB, KS
117 IS Birmingham, AL	137 IS Terre Haute, IN	152 IS Reno-Tahoe IAP9, NV

5. Contractors. TBD.

6. Cost. PEC: 503117F

Units Required	Unit Cost	Program Cost
CAT I NRE (3600)	N/A	\$900,000
Total		\$900,000



Operational Support Aircraft (OSA)



- Provides Special Mission Transportation of Distinguished Visitors
- ANG OSA Units Provide: C-38 - 100%, C-40 - 25%, C-21 - 36% of the Total Fleet

The ANG supports crucial special missions including Distinguished Visitor (DV) transportation. Each of these missions has unique requirements beyond the traditional support provided to the rest of the ANG's fleet.

The ANG's Operational Support Aircraft (OSA) includes the C-40C and C-38A flown by the D.C. Air Guard's 201st AS at Andrews AFB, MD and the C-21A flown by the 200th AS at Colorado Springs, CO; the 119th WG at Fargo, ND; the 103rd WG at Bradley, CT; and the 110th WG at Battle Creek, MI. The 201st AS aircraft provide worldwide VIP transportation for Congressional, DoD, Air Force and National Guard travel missions. The primary mission of all OSA aircraft is to ensure passenger safety and comfort while providing the utmost in reliability. The ANG's modernization efforts will continue to focus on keeping these aircraft modern and safe.



Since the ANG began the C-40C mission, demand has increased significantly. In order to improve service and increase mission availability an additional C-40C aircraft is required.

The C-38A was originally acquired to support CONUS operations; however, the evolution of National Guard OCONUS commitments has driven a fundamental mission change. The two C-38As lack the range and reliability to meet new mission requirements and need to be replaced. A capabilities based assessment determined that the best course of action was to replace the C-38As with C-37Bs.



Operational Support Aircraft 2011 Weapons and Tactics Conference

Critical Capabilities List

- C-38A Replacement Aircraft
- C-40C Procurement
- C-40C High Speed Data, Onboard Internet Capability
- C-40C Electronic Flight Bag

Essential Capabilities List

- None

Desired Capabilities List

- None

OPERATIONAL SUPPORT AIRCRAFT EXECUTIVE SUMMARY

Modernization Priority Profiles (\$ Million)

Program	2013	2014	2015
C-38A Replacement Aircraft Program	\$62.00 ²	\$65.10 ²	\$68.26 ²
C-40C Procurement	\$103.00 ²	-	-
C-40C High Speed Data	\$8.50 ²	-	-
C-40C Electronic Flight Bag	\$0.70 ²	-	-

Notes: ¹ 3840 Appropriation ² 3010 Appropriation ³ 3600 Appropriation ⁴ 3080 Appropriation

- C-38A Replacement Aircraft Program - Replaces existing C-38 aircraft with longer range aircraft to support evolving worldwide Congressional and DoD missions.
- C-40C Procurement - Completes the requirement for the C-40C aircraft in the ANG. This aircraft supports worldwide Congressional, DoD, Air Force, and National Guard Distinguished Visitor (DV) support missions.
- C-40C High Speed Data (HSD) - Allows the DVs and their staffs traveling on the C-40C the ability to conduct time-critical business via internet, e-mail, and phone while airborne.
- C-40C Electronic Flight Bag (EFB) - Adds an electronic information management device that helps to improve situational awareness, cockpit efficiency, productivity, and most important, allows aircrews to safely adapt to in-flight mission changes.

C-38A REPLACEMENT AIRCRAFT PROGRAM

1. Background. A C-38A replacement aircraft is required to support the existing Distinguished Visitor (DV) transportation fleet at the 201st Airlift Squadron (AS), Andrews AFB. The unit supports Congressional members and Delegation, Executive Branch, Department of Defense, Air Force, and National Guard travel missions worldwide. Current requirements identify four small DV support aircraft. The 201st AS currently operates only two C-38A aircraft. Replacing the C-38A fleet addresses several operational shortfalls and significantly improves the mission capability. The replacement aircraft will extend the non-stop range of the aircraft well into European airspace and complement the existing larger C-40Cs for smaller contingents. This capability eliminates time-consuming enroute refueling stops and decreases extended duty days for passengers and aircrews. In addition to the lack of range, the C-38A has historically demonstrated a substandard mission capable rate which is unacceptable for aircraft in the DV transportation arena.

2. Source of Need. Air Mobility Command Operational Requirements Document (ORD) 000-90 dated 12 June 1995 modified 3 May 1996; NGB Mission Need Statement 002-94 and NGB ORD 002-94 dated 24 July 1994.

3. Impact If Not Funded. The unit is currently operating with only two short range aircraft to fulfill taskings. Requests for support are unfilled because the current aircraft are tasked or don't have the range to complete the mission. A replacement aircraft close mission capability gaps by extending range and increasing mission readiness. Without additional aircraft, the ANG assets will remain over tasked and unable to effectively accomplish the unit's primary mission.

4. Unit Impacted.

201 AS JB Andrews, MD

5. Contractor. Bombardier, Montreal, Quebec, Canada; Gulfstream, Savannah, GA.

6. Cost. PEC: 0401314F

Units Required*	Unit Cost	Program Cost
4 Replacement Aircraft (3010)	\$66,752,500	\$267,010,000
Total		\$267,010,000

* Based on the average of FY12-FY15 costs beginning with \$61.95M and increasing 5% per year

C-40C PROCUREMENT

1. Background. The 201st Airlift Squadron (AS), District of Columbia Air National Guard provides worldwide air transportation for Congressional Members and Delegations, the Executive Branch, Department of Defense officials, high-ranking U.S. and foreign dignitaries and HQ USAF inspection team travel. The 201st AS currently operates three C-40Cs (military modified Boeing 737 Boeing Business Jets). The ANG is one aircraft short of meeting operational requirements. A fourth aircraft will significantly improve fleet readiness and reliability. Scheduled maintenance reduces unit capability and if unscheduled maintenance actions ground additional aircraft there is a good chance that flights will be cancelled. An additional aircraft allows the unit to overlap schedules and significantly improves aircraft availability. Another aircraft is required in order to increase airlift capability, reliability and support additional airlift requests.

2. Source of Need. Mission Need Statement NGB 001-97 dated 10 Jun 97; ANG Operational Requirements Document 002-02 dated 19 Feb 04.

3. Impact If Not Funded. Not funding a fourth aircraft will significantly impact aircraft availability, mission readiness, and will impact the unit's ability to meet all Congressional taskings.

4. Unit Impacted:

201 AS JB Andrews, MD

5. Contractor. Boeing Commercial Airplane Company, Seattle, WA.

6. Cost. PEC: 0401314F

Units Required	Unit Cost	Program Cost
1 C-40C Aircraft (3010)	\$103,000,000	\$103,000,000
Total		\$103,000,000

C-40C HIGH SPEED DATA (HSD)

1. Background. The 201st Airlift Squadron utilizes the C-40C to provide worldwide air transportation to Congressional Members and Delegations, the Executive Branch, Department of Defense officials and high-ranking U.S. and foreign dignitaries. The changing technological landscape has re-defined the equipment and the tools necessary to effectively conduct business in today's corporate/government environment. The distinguished visitors and their staffs traveling on the C-40C require the ability to conduct time critical unclassified business via internet, e-mail, and phone while airborne.

2. Source of Need. Air National Guard Operational Requirements Document 002-02 dated 19 Feb 04; AMC Requirements and Planning Council (R&PC) requirements matrix, July 2010; ANG sponsored AF Form 1067 submitted to AMC.

3. Impact If Not Funded. Although the unit currently provides excellent service to the DV traveler and his/her staff, it does not meet their technological needs for effectively conducting business while airborne. Not funding this capability will significantly impact the unit's ability to provide an adequate airborne work environment, thus negatively impacting the DV and his/her staff.

4. Units Impacted.

201 AS JB Andrews, MD

5. Contractor. Rockwell Collins, Cedar Rapids, IA; PentaStar Aviation, Waterford, MI; EMS Satcom, Kanata, Ontario, Canada; ViaSat, Carlsbad, CA.

6. Cost. PEC: 0401314F

Units Required	Unit Cost	Program Cost
Supplemental Type Certificate (STC) (3010)	N/A	\$2,500,000
3 High Speed Data Systems (3010)	\$2,000,000	\$6,000,000
Total		\$8,500,000

C-40C ELECTRONIC FLIGHT BAG (EFB)

1. Background. The definition of an EFB, according to the Federal Aviation Administration's Advisory Circular (AC No. 120-76A), is "an electronic display system intended primarily for cockpit / flight deck or cabin use. EFB devices can display a variety of aviation data or perform basic calculations." In short, an EFB is an electronic information management device that helps to improve situational awareness, cockpit efficiency, productivity, and safety. They typically consist of a screen and a control unit that may be installed, mounted or contained in one sole portable unit. EFBs can electronically store and retrieve documents required for flight operations, such as Technical Orders, Air Force Instructions, Flight Operations Manual, Minimum Equipment Lists, as well as providing the most current Flight Information Publications (FLIP). Additional motivators for using an EFB are significant cost savings on annual paper FLIP purchases and the considerable reduction of paper waste associated with each FLIP changeover.

2. Source of Need. AF Form 1067 with Air Mobility Command (AMC) tracking number 03-119; AMC Operational Support Airlift/Executive Airlift (OSA/EA) Requirements Matrix.

3. Impact If Not Funded. The potential to receive significant mission changes during distinguished visitor transport missions is extremely high. The aircrew needs the ability to have all possible mission information and performance calculation capability at their fingertips. Not funding the EFB might place the crew in a position where a single mission change could jeopardize mission success because the crew might not have the needed paper publications with them. It is not practical to carry all possible publications. Without the EFB, crews will continue to make critical decisions without accurate real-time information in the cockpit.

4. Units Impacted.

201 AS JB Andrews, MD

5. Contractor. Esterline CMC Electronics, Montreal, Canada; NavAero, Chicago, IL; IMS Flight Deck, Brea, CA; Boeing Commercial Airplane Company, Seattle, WA.

6. Cost. PEC: 0401314F

Units Required	Unit Cost	Program Cost
Supplemental Type Certificate (STC) (3010)	N/A	\$320,000
3 Electronic Flight Bag (3010)	\$125,000	\$375,000
Total		\$695,000

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GUARDIAN ANGEL / Special Tactics / Security Forces



- **Combat Search and Rescue**
- **Special Operations**
- **Security Forces**
- **Tactical Air Control Party**

ANG Guardian Angels comprise 30% of the Air Force's critical high demand Combat Pararescue personnel while ANG Special Tactics Squadrons account for 25% of the Air Force Special Tactics capability. ANG Security Forces personnel from the 54 States and Territories are comprised of over 7,000 assigned Security Forces members. Tactical Air Controllers comprise 39 percent of Air Force Tactical controllers.

The ANG has three Guardian Angel squadrons: the 103RQS, Francis S. Gabreski Airport, NY; 131RQS, Moffett Federal Airfield, CA; 212RQS, Elmendorf AFB, AK. Pararescue consists of Combat Rescue Officers (CROs) and Pararescue Jumpers (PJs) and their mission is to recover downed and injured aircrew members in austere and non-permissive environments. Pararescue provides emergency medical treatment necessary to stabilize and evacuate injured personnel while acting in an enemy evading recovery role.

The ANG has two Special Tactics (STS) squadrons: Standiford Field, KY; 123STS and Portland IAP, OR; 125 STS. Special Tactics teams (STTs) are quick-reaction, deployable Air Force units, which are uniquely organized, trained, and equipped to facilitate the air/ground interface during joint special operations and sensitive recovery missions. Special tactics personnel provide quick-reaction command and control, close air support, positive air traffic management, and casualty recovery, treatment and evacuation staging during joint air and ground/maritime operations including short notice, sensitive contingencies. As the battlefield dictates, Security Forces train to encounter hostile threats while conducting Military Operations in Urban Terrain, Area Security Operations, Close Precision Engagement, Raven missions, Fly-Away Security, Detainee Movement Operations, Agricultural Development missions, Personal Security Details, mounted/dismounted individual and team patrols, convoy operations, high-risk vehicle inspections, suspect apprehension/detention, installation access control, and heavy weapons support.

Tactical Air Control Party (TACP) is a small team of Air Force personnel who provide airspace deconfliction and terminal control of close air support firepower onto enemy ground targets. TACPs also provide advice, assistance, and planning for the employment of air and space power in support of the Air Support Operations Center (ASOC) which is subordinate to the Air Operations Center (AOC). TACPs advise ground commanders on the best use of air power, establish and maintain command and control communications and provide precision terminal attack guidance.



GUARDIAN ANGEL / Special Tactics / Security Forces / Tactical Air Control Party 2011 Weapons and Tactics Conference

Critical Capabilities List

GA:

- Upgrade GA Combat Survivability Suite
- Improved Recovery Vehicles
- Scenario Training Suite
- Modernized Personnel Locator Tools

ST:

- Dismounted Operator Suite
- Heavy Weapons Improvement
- Employment Enhancement Suite
- Training Enhancement Suite
- Universal Aircraft Datalink

SF:

- Small Arms Training Simulated Munitions
- Explosive Detection Kits
- Less Than Lethal Equipment
- Mobility Bag Upgrade
- Small Arms Range

TACP:

- Handheld LOS SPI-Capable Direct Data Link Between JTAC / Aircraft
- Handheld Day / Night Laser Coded Spot Tracker
- Lightweight Handheld Laser Target Range Finder
- Rapid Deployable Joint Operational Communications Suite
- Next Generation Handheld JTAC Radio

Essential Capabilities List

GA:

- Computerized Software Program to integrate HARM and Scheduling

ST:

- Mortar Tubes
- Portable Digital ATC Radar
- 10W Intra-Team Radio
- Handheld Range Finder w/SAASM GPS and Night Vision
- SOCOM Approved Small Laser Target Designator

SF:

- Surveillance, Target Acquisition, and Night Observation (STANO) Upgrades
- Weapons Shortfalls
- Dual Use Traffic Control / Security Kits (ECP/TCP)
- Combat Training Simulator
- All Terrain Utility Vehicles

TACP:

- Rover 5 Upgrades for DVB-T Capability
- JTAC Simulation Suite for DMO and Stand Alone Simulation
- ASOC simulation Suite for DMO and Stand Alone Simulation

Desired Capabilities List

GA; ST, SF & TACP:

- None

GUARDIAN ANGEL / SPECIAL TACTICS / SECURITY FORCES / TACTICAL AIR CONTROL PARTY EXECUTIVE SUMMARY

Modernization Priority Profiles (\$ Million)

Program	2013	2014	2015
Guardian Angel			
Upgraded Combat Survivability Suite	\$3.90 ⁴	-	\$5.16 ⁴
Improved Recovery Vehicles	\$1.60 ⁴	\$1.95 ⁴	-
Modernized Personnel Locator Tools	-	-	\$3.60 ⁴
Special Tactics			
Dismounted Operator Suite	-	\$2.66 ⁴	-
Heavy Weapons Improvement	\$.69 ⁴	-	-
Employment Enhancement Suite	-	-	\$1.14 ⁴
Universal Aircraft Datalink	\$0.80 ⁴	-	-
Security Forces			
Small Arms Training Simulated Munitions	\$1.80 ⁴	-	-
Handheld Electronic Explosive Detection Kits	-	\$11.16 ⁴	-
Less-Than-Lethal Equipment	-	-	\$9.30 ⁴
Mobility Bag Upgrade	\$18.08 ⁴	-	-
Small Arms Range	\$94.30 ⁴	\$94.30 ⁴	\$98.40 ⁴
Tactical Air Control Party			
Handheld LOS/SPI Capability	-	\$3.36 ⁴	-
Day/Night Coded Spot Tracker	-	-	\$8.45 ⁴
Lightweight Handheld Laser Target Range Finder	-	\$5.04 ⁴	-
Rapid Deployment Operational Communication Suite	\$11.90 ⁴	-	-
Next Generation Handheld Radio	-	-	\$13.44 ⁴

Notes: ¹ 3840 Appropriation ² 3010 Appropriation ³ 3600 Appropriation ⁴ 3080 Appropriation

Guardian Angel

- Upgraded Combat Survivability Suite - Provides improvements to pararescue equipment to include datalink, handheld daytime laser marker, weapons upgrades and non-lethal weapons to ensure the pararescue jumper is ready for any environment against any enemy.
- Improved Recovery Vehicles - Provides watercraft and ground vehicles to allow Guardian Angels to respond quickly to any over-land or water rescue mission.
- Modernized Personnel Locator Tools - Provides underwater robots and sonar to help eliminate the “search” in search and rescue and reduce harsh environmental exposure to pararescue personnel.

Special Tactics

- Dismounted Operator Suite - Provides Special Tactics Teams (STSs) a tactical information display, Video Down Link (VDL) receiver plus a friendly and enemy tracking and targeting capability to increase situational awareness.
- Heavy Weapons Improvement - Provides Special Tactics personnel with weapons optics enhancements to more accurately engage the enemy.
- Employment Enhancement Suite - Provides Special Tactics operators with small light tactical vehicles and craft for overland and water movement to traverse to their objective area as quickly and efficiently as possible.
- Universal Data Link - Provides Special Tactics Teams (STSs) with the lightest and easiest to operate situational awareness datalink receivers available.

Security Forces

- Small Arms Training Simulated Munitions - Provides simulated munitions for the M-4 and M-9 that do not require a specific range and are certified as safe for use inside facilities.
- Handheld Electronic Explosive Detection Kits - Provides the procurement of handheld explosive detection equipment, in the absence of highly trained dogs (K-9), to fill an explosive detection critical gap.
- Less-Than-Lethal Equipment - Provides equipment for Security Forces to respond with less than lethal force in any given scenario.
- Mobility Bag Upgrade - Provides SF personnel replacement mobility bags and equipment.
- Small Arms Range - Procures a modular small arms range to provide all warfighters with the capability and immediate availability to complete mission required small arms training.

Tactical Air Control Party

- Handheld LOS/SPI Capability - Provides lightweight, digital, interactive mapping devices capable of providing air/ground force situational awareness, navigation, and target coordinate generation to shorten kill chain timeline and mitigate collateral damage and fratricide.
- Day/Night Coded Spot Tracker - Provides a day and night capable system which allows for the detection of PRF coded and IR lasers from marking devices.
- Lightweight Handheld Laser Target Range Finder - Provides the ability to rapidly determine the precise location of targets for Close Air Support (CAS) assets and/or observation by ISR assets while minimizing the risk of fratricide and/or collateral damage.
- Rapid Deployment Operational Communication Suite - Provides the ability to package the existing PRC-117 multi-band tactical radio and the PRC-150 High Frequency (HF) tactical radio to allow Air Support Operations Squadrons (ASOS) to communicate with disaster response agencies through line-of-sight voice communications, over-the-horizon voice communications, and digital/Tactical Satellite (TACSAT) communications.
- Next Generation Handheld Radio - Provides the ability to talk to aircraft and other remote sites which, in a non-permissive environment, precludes the JTAC from maintaining effective communications.

GUARDIAN ANGEL UPGRADE COMBAT SURVIVABILITY SUITE

1. Background. Guardian Angel (GA) personnel are required to perform a plethora of missions at a moment's notice. This requirement demands that GA be highly flexible and autonomous. This flexibility requires a unique blend of equipment designed to function in almost any environment and be effective against any enemy threat. In an effort to continually modernize and improve safety of rescue operations, GA requires a significant increase in capabilities to include weapons, communication data link systems, and personal protective equipment. Additionally, GAs have limited day and night marking devices to help aircrews identify friendly and enemy threats on the ground. Multiple missions in Operation ENDURING FREEDOM and recent natural disasters have highlighted the need for improvements to current GAs out dated weapons and personal protective equipment. Communication data link systems would allow GA operators to track their own and other friendly's position with a moving map display while also being compatible to view other friendly air assets Video Down Link feed. Additionally, data link systems would allow GA command elements to maintain situational awareness and communications with operators in the field which would greatly improve the chances of mission success.

2. Source of Need. ANG WEPTAC Critical Requirement 2011; Lessons Learned Operation ENDURING FREEDOM, Operation IRAQI FREEDOM; Mission Required Equipment.

3. Impact If Not Funded. Mission accomplishment may be jeopardized due to antiquated weapons and personal protective equipment. Also, lack of constant and robust communication with pararescue men operating in isolated environments may delay, hinder or cause mission failure.

4. Units Impacted.

106 RQW Gabreski Field, NY 129 RQW Moffett Federal Airfield, CA 176 WG JB Richardson AFB, AK

5. Contractor. Raytheon, Fullerton CA, Black Diamond Advanced Technology; Tempe, AZ; L3-Insight Technology, Londonderry, NH.

6. Cost. PEC: 53119F

Units Required	Unit Cost	Program Cost
90 M-4 Modernization (3080)	\$1600	\$144,000
90 M-9 Modernization (3080)	\$1700	\$153,000
30 Portable Data Links (3080)	\$40,000	\$1,200,000
60 Handheld Day/Nite Laser Markers (3080)	\$80,000	\$4,800,000
60 Fusion Goggles (3080)	\$40,000	\$2,400,000
60 Non-Lethal Weapons (3080)	\$6000	\$360,000
Total		\$9,057,000

GUARDIAN ANGEL PARARESCUE RECOVERY VEHICLES

1. Background. Guardian Angel (GA) teams are required to operate in any environment and recover isolated personnel in any terrain, in both combat operations and domestic operations response events. A water rescue craft capable of being air-dropped and operating in open ocean conditions is needed to replace the legacy water rescue craft. Due to the increased safety regulations and the number of team members, the support for jump and dive operations have also increased. The requirement for a larger support boat is necessary to continue with these types of missions. Additionally, ground rescue vehicles, both armored and unarmored, are needed to ensure PJs can respond quickly and survive any over-land rescue scenario. Currently the Pararescue Community (PJ) community is developing specific armored vehicles that will support their operational requirements. Fielding for the ANG is not projected until late 2012 or early 2013. ANG teams are currently operating without this critical mission equipment.

2. Source of Need. Guardian Angel, Air-Deployable, Recovery Vehicle SDR, Lessons Learned Operation ENDURING FREEDOM, Operation IRAQI FREEDOM, ANG Critical Requirement ARC 2011 WEPTAC.

3. Impact If Not Funded. PJ personnel will continue to rely on legacy vehicles and watercraft with limited range and capability, risking operator/patient safety and mission accomplishment

4. Units Impacted.

106 RQW Gabreski Field, NY 129 RQW Moffett Federal Airfield, CA 176 WG JB Richarson AFB, AK

5. Contractor. Rapid Response Technology, NY, NY; Northwind Marine, Seattle, WA; NAVATEK, Honolulu, HI; BC Customs, Salt Lake City, UT.

6. Cost. PEC: 53119F

Units Required	Unit Cost	Program Cost
3 Water Operations Support Boat (3080)	\$350,000	\$1,050,000
16 Advanced Water Rescue Craft (3080)	\$100,000	\$1,600,000
6 Search and Rescue Tactical Vehicle (3080)	\$150,000	\$900,000
Total		\$3,550,000

GUARDIAN ANGEL MODERNIZED PERSONNEL LOCATOR TOOLS

1. Background. Guardian Angel (GA) teams are required to operate in any environment and recover isolated personnel and sensitive equipment in any terrain, in both combat operations and domestic operations response events. One of the key elements to the recovery of isolated personnel and sensitive equipment is to locate the survivors and/or equipment. At the present time, the GA community is lacking the effective capability required to locate survivors and equipment, dramatically increasing risk to the operator. Operators are spending longer amounts of time searching for isolated personnel and sensitive equipment, diving deeper than necessary, are exposed to the elements, and searching in the wrong location. Specialized equipment such as underwater robots and sonar can dramatically reduce the time spent locating the survivor and/or equipment, reduce exposure to rescue personnel and increase the likelihood of successfully completing missions.

2. Source of Need. Lessons Learned Operation ENDURING FREEDOM, Operation IRAQI FREEDOM, Lessons learned CONUS Humanitarian missions; Mission Required Equipment UTCs

3. Impact If Not Funded. Pararescue personnel will continue to rely on legacy equipment and methods with minimal capability, increasing risk to the operator/patient safety and mission accomplishment.

4. Units Impacted.

106 RQW Gabreski Field, NY 129 RQW Moffett Federal Airfield, CA 176 WG JB Richardson AFB, AK

5. Contractor. TBD.

6. Cost. PEC: 53119F

Units Required	Unit Cost	Program Cost
6 Underwater Search Robot (3080)	\$300,000	\$1,800,000
6 Full Scan SONAR (3080)	\$200,000	\$1,200,000
6 USAR (3080)	\$100,000	\$600,000
Total		\$3,600,000

SPECIAL TACTICS DISMOUNTED OPERATOR SUITE

1. Background. Special Tactics Combat Control Teams (CCT) deployed in Afghanistan and Iraq find themselves engaging the enemy with their personal weapons at close range while providing precision strike capabilities on targets at ranges from two hundred meters to three thousand meters. Lessons learned indicate that the key to the survival and victory of friendly forces is rapid and accurate return fire on the enemy followed by immediate and accurate precision air strikes. As aircraft technology has advanced, the need to carry additional devices in order to employ those capabilities has increased the dismounted CCT load. CCTs require the lightest, most accurate, and easiest to operate gear available. These capabilities increase their lethality on the battlefield by enabling engagement of an enemy using personal weapons, then gain situational awareness to quickly bring precise airpower to bear on the enemy while avoiding fratricide. Capabilities of the components are complementary and interoperable. They give the operator maximum situational awareness from a single, light weight system. The package includes a small tactical information display, Video Down Link (VDL) receiver, plus a friendly and enemy tracking capability. The VDL receiver is capable of supporting dual roles of wartime and domestic, peacetime operations. It will receive military, encrypted, digital waveforms in the C,L,S, and K_u bands. Additionally, the software allows reception in the same frequency bands using the Digital Video Broadcast-Terrestrial waveform preferred by civilian law enforcement agencies.

2. Source of Need. Lessons learned from Operations IRAQI FREEDOM and ENDURING FREEDOM; ANG Critical Capability WEPTAC 2011.

3. Impact If Not Funded. Failure to provide STS Combat Controllers with lighter, more precise, and easily operated equipment will result in decreased mission capability, possible fratricide events, and increased casualties among Combat Controllers.

4. Units Impacted.

123 STS Louisville IAP, KY 125 STS Portland IAP, OR

5. Contractor. KDH Defense Systems, Eden, NC; L3-Insight Technology, Londonderry, NH; Black Diamond Advanced Technology; Tempe, AZ; Peltor-3M, Indianapolis, IN.

6. Cost. PEC: 53130F

Units Required	Unit Cost	Program Cost
107 Personal Protection Equip (3080)	\$3,700	\$395,900
30 Integrated Tactical Interface (3080)	\$28,000	\$840,000
20 Video Data Link (3080)	\$20,000	\$400,000
100 Hot Weather Headset (3080)	\$300	\$30,000
20 SWIR systems (3080)	\$50,000	\$1,000,000
Total		\$2,665,900

SPECIAL TACTICS HEAVY WEAPONS IMPROVEMENT

1. Background. Special Tactics Combat Control Teams (CCTs) deployed in Afghanistan and Iraq find themselves engaging the enemy with their vehicle mounted heavy weapons, to include the M2, MK-19, MK-46, and MK-48, at ranges from fifty meters to three thousand meters. Recent lessons learned indicate the enemy tactics are resulting in more frequent close in contact with friendly forces. Additionally, diminishing strike assets and Theater rules of engagement are requiring our forces to engage the enemy for a longer period of time before CAS provides effects. The employment of the heavy weapons suite utilized by STS is a fairly recent development and the weapons have been fielded with limited sighting, ranging, and targeting capabilities. Utilizing advanced optics on the weapons will enable CCT operators to accurately engage enemy targets at greater distances while reducing the possibility of collateral damage. Additionally, the ability to effectively engage the enemy at longer distances will allow additional time for CAS aircraft to arrive on station and employ their munitions.

2. Source of Need. Lessons learned from Operations IRAQI FREEDOM and ENDURING FREEDOM; ANG Critical Capability ARC 2011 WEPTAC.

3. Impact If Not Funded. Failure to provide STS Combat Controllers with advanced optics for their heavy weapons will degrade their ability to accurately engage the enemy at the greatest distances possible, increase risk of collateral damage, and potentially increase casualties among Combat Controllers.

4. Units Impacted.

123STS Louisville IAP, KY 125STS Portland IAP, OR

5. Contractor. BE Meyers, Redmond, WA; L3-Insight Technology, Londonderry, NH; Leupold, Portland, OR.

6. Cost. PEC: 53130F

Units Required	Unit Cost	Program Cost
10 Engagement Accessories (3080)	\$65,000	\$650,000
12 SSR Optics (3080)	\$3,500	\$42,000
Total		\$692,000

SPECIAL TACTICS EMPLOYMENT ENHANCEMENT SUITE

1. Background. Special Tactics Squadrons (STS) consist of Combat Control Teams, Pararescue men and Special Operations Weather Teams utilize a wide variety of employment vehicles for both OEF and Domestic operations. The operators rely heavily on small light tactical vehicles and craft for overland and water movement to traverse to their objective area as quickly and efficiently as possible. It has been five years or more since the majority of these vehicles have been updated and their reliability is becoming degraded and the advancement in many of these platforms dictate a need to replace a portion of the fleet to enable STS operators to respond to events as the mission commanders anticipate.

2. Source of Need. Lessons learned from Operations IRAQI FREEDOM and ENDURING FREEDOM; ANG Critical Requirement ARC 2011 WEPTAC.

3. Impact If Not Funded. STS Operators may experience mission degradation due to aging equipment. These employment platforms are used to respond to both hostile engagements and homeland disaster relief efforts.

4. Units Impacted.

123 STS Louisville IAP, KY 125 STS Portland IAP, OR

5. Contractor. KDH Defense Systems, Eden, NC; S&S Precision, Virginia Beach, VA; Polaris, Hamel, MN; D.I.B, Friendsville, MD; Zodiac, Stevensville, MD.

6. Cost. PEC: 53130F

Units Required	Unit Cost	Program Cost
40 HAHO Navigation (3080)	\$2,000	\$80,000
100 Jumpable PPE (3080)	\$2,000	\$200,000
10 LT ATV (3080)	\$20,000	\$200,000
2 Swiftwater Craft (3080)	\$20,000	\$40,000
8 Motorcycles (3080)	\$9,000	\$72,000
4 Snow Machine (3080)	\$11,000	\$44,000
10 Zodiacs (3080)	\$15,000	\$150,000
1 Water Operations Support Boat (3080)	\$350,000	\$350,000
Total		\$1,136,000

SPECIAL TACTICS UNIVERSAL DATA LINK

1. Background. Special Tactics Combat Control Teams (CCT) deployed in Afghanistan and Iraq are being ambushed by the enemy at ranges from one meter to three hundred meters. CCT must provide precision strike capabilities on targets at ranges from two hundred meters to three thousand meters. As the focus of Operation ENDURING FREEDOM for Special Operations Forces transitions to Village Stabilization Operations the CCT personnel are finding themselves moving with small teams on small tactical vehicles and/or on foot through hostile territory. CCT operators currently carry multiple radios to ensure interoperability with the various types of aircraft that may be assigned to them. Lessons learned indicate that the key to survival and victory of friendly forces is to avoid ambush all together, but, if ambushed, they must rapidly gain fire superiority and follow this with immediate and accurate precision air strikes. CCTs require the lightest and easiest to operate situational awareness receivers available and it must be universally compatible with the equipment on all strike aircraft.

2. Source of Need. Critical capability shortfall identified at the ARC 2011 WEPTAC; lessons learned Operations ENDURING FREEDOM and IRAQI FREEDOM.

3. Impact If Not Funded. Real time information to and from ground party personnel and aircraft is critical to conducting ground operations in hostile territory. Lack of data link communication creates high potential for mission failures, lost personnel, lost aircraft and increased likelihood of collateral damage. The situational awareness suites must be interoperable with all air packages.

4. Units Impacted.

123 STS Louisville IAP, KY 125 STS Portland IAP, OR

5. Contractor. Raytheon, Fullerton, CA.

6. Cost. PEC: 53130F

Units Required	Unit Cost	Program Cost
20 Universal Data Link (3080)	\$40,000	\$800,000
Total		\$800,000

SECURITY FORCES SMALL ARMS TRAINING SIMULATED MUNITIONS

1. Background. A rapidly expanding concern for Security Forces (SF) is the inability to effectively conduct small arms training in a realistic scenario. The use of small arms training simulated munitions kits will enhance the combat effectiveness of our SF, while utilizing fewer resources at an overall reduced cost. In addition, it will facilitate more training at home station, which will relieve stress on families, civilian employers, and wing commanders. The ANG spends over 7 million dollars a year in small arms training munitions. This number has grown exponentially year over year due to increased number of deployments, operations tempo, and new training requirements. The primary benefits from the use of small arms training simulated munitions are gained both at a financial cost savings and manpower savings. However, the secondary benefits gained with the use of the simulated munitions are a drastic reduction in both environmental & health risks associated with small arms ranges. The use of small arms ranges increases safety and environmental hazards. The simulated munitions will not require a specific range, and the United States Air Force has certified them as safe for use inside facilities. The procurement of the small arms training simulated munitions kits is a force multiplier; enhancing combat skills that will directly result in a more secure air base in both the deployed and home station areas of operation.

2. Source of Need. Critical capability shortfall identified at the 2011 ARC WEPTAC; AFI 36-2225 (Shoot, Move, & Communicate); Lessons Learned from domestic operations; Operations ENDURING FREEDOM and IRAQI FREEDOM/NEW DAWN.

3. Impact If Not Funded. Failure to procure the individual equipment items will significantly degrade mission effectiveness, increase SF personnel vulnerability and reduce Total Force standardization.

4. Units Impacted. All 93 SF Squadrons will be impacted within the 54 States and US Territories.

5. Contractor. TBD.

6. Cost. PEC: 52625F

Units Required	Unit Cost	Program Cost
3600 M-4 Simulated Munitions Kit (3080)	\$200	\$720,000
3600 M-9 Simulated Munitions Kit (3080)	\$200	\$720,000
3600 Simulated Munitions PPE (3080)	\$100	\$360,000
Total		\$1,800,000

SECURITY FORCES HANDHELD ELECTRONIC EXPLOSIVE DETECTION KIT

1. Background. Security Forces (SF) maintain an extremely high Operations Tempo including Air Expeditionary Force deployments and domestic operations homeland security responsibilities which requires outfitting SF with the most modern equipment available. Additionally, new mission requirements have increased visibility on this field driven shortfall. Explosive device threats/incidents are increasing in numbers and complexity, and the Air National Guard (ANG) SF community has zero capability to detect this threat; resulting in a major vulnerability. The Active Duty (AD) SF community combats the same threat through the use of electronic explosive detection equipment and highly trained dogs (K-9). The ANG SF has no K-9 support, and the ability to procure K-9 resources is not an option. Therefore, the procurement of handheld explosive detection equipment is the optimal solution to fill this critical capability gap. The ability to detect explosives at base entry control points, both home station and overseas, will fortify installation security as well as provide a higher level of safety and security for all airmen.

2. Source of Need. Critical capability shortfall identified at the 2011 Air Reserve Component WEPTAC; lessons learned from domestic operations, as well as Operations ENDURING FREEDOM and IRAQI FREEDOM / NEW DAWN.

3. Impact If Not Funded. Failure to procure electronic explosive detection equipment significantly degrades mission effectiveness and increases the vulnerability of SF personnel and all protected resources. The inability to detect explosives at installation entry control points is an enormous threat to all ANG operations. In addition, procurement is necessary for the standardization between the ANG and the AD forces.

4. Units Impacted. All 93 SF Squadrons will be impacted within the 54 States and US Territories.

5. Contractor. TBD.

6. Cost. **PEC: 52625F**

Units Required	Unit Cost	Program Cost
279 Handheld Explosive Detection Device (3080)	\$40,000	\$11,160,000
Total		\$11,160,000

SECURITY FORCES LESS-THAN-LETHAL EQUIPMENT

1. Background. The inability for Air National Guard (ANG) Security Forces to effectively respond with less-than-lethal force to any given scenario creates a liability and puts the safety of our airmen at risk. The current Security Forces less-than-lethal equipment package is designed to outfit the standard Security Forces 13-person squad. ANG SF does not currently have a less-than-lethal capability to employ within their assigned duties. USAF Use of Force (UoF) regulations mandates less-than-lethal options between basic verbal commands and lethal force; this less-than-lethal equipment shortfall greatly hinders our SF to effectively employ their required UoF tactics. In many scenarios the use of less-than-lethal force is a more appropriate solution than the use of deadly force. Security incidents often involve an increased risk to the public until first responders can secure the scene. Less-than-lethal capabilities are essential to mitigating the associated risk. Additionally, this kit aligns ANG SF with their active duty counterparts. A single kit equips a squad of thirteen (13) with tasers and less-than-lethal munitions such as beanbag rounds and tear gas. Lastly, each kit also equips ANG SF with helmets, pads, shields, batons, and Oleoresin Capsicum (pepper) spray for each member

2. Source of Need. Critical capability shortfall identified at the ARC 2011 WEPTAC; AFI 31-207 (Arming & Use of Force), lessons learned from domestic operations, Operations ENDURING FREEDOM and IRAQI FREEDOM / NEW DAWN.

3. Impact If Not Funded. Failure to procure the individual equipment items will significantly degrade mission effectiveness, increase ANG personnel vulnerability, and reduce Total Force standardization.

4. Units Impacted. All 93 SF Squadrons will be impacted within the 54 States and US Territories.

5. Contractor. TBD.

6. Cost. PEC: 52625F

Units Required	Unit Cost	Program Cost
186 Less-Than-Lethal kits (3080)	\$50,000	\$9,300,000
Total		\$9,300,000

SECURITY FORCES MOBILITY BAG UPGRADES

1. Background. Security Forces (SF) deploy at an extended and more frequent rate than most other airmen. This high operations tempo has caused SF mobility bag equipment to degrade at a higher rate, therefore generating a higher monetary bill for replacement and sustainment. The content of the SF mobility bag includes specialized equipment specific to SF duties. Items included in the mobility bag are primarily Personal Protective Equipment (PPE) & SF mission specific duty gear. Additionally, rapidly evolving Area of Responsibility requirements have identified a need for fire retardant clothing. However, the current inventory of SF clothing does not meet this requirement and places SF members at a greater risk of severe injuries when exposed to indirect fire or Improvised Explosive Devices. Another piece to the SF mobility bag kit is ballistic eye protection. This vital PPE used is by SF members to combat environmental and wartime hazards inherent to force protection missions. Bottom line, SF units are currently unable to maintain their required number of mobility bags to meet mission requirement; directly a result of lack of resources and funding. Requested equipment brings improved capabilities to a field driven requirement.

2. Source of Need. Critical capability shortfall identified at the ARC 2011 WEPTAC; lessons learned from domestic operations as well as Operations ENDURING FREEDOM and IRAQI FREEDOM / NEW DAWN.

3. Impact If Not Funded. Failure to procure the individual equipment items will significantly degrade mission effectiveness, increase ANG personnel vulnerability, and reduce Total Force standardization.

4. Units Impacted. All 93 SF Squadrons will be impacted within the 54 States and US Territories.

5. Contractor. TBD.

6. Cost. PEC: 52625F

Units Required	Unit Cost	Program Cost
2,910 Mobility Bag Kit (3080)	\$1,800	\$5,238,000
2,910 Fire Resistant Undergarments/PPE (3080)	\$3,000	\$8,730,000
2,910 Small Arms Weapon Cases (3080)	\$412	\$1,198,920
2,910 SF Specific Duty Misc. Items (3080)	\$1,000	\$2,910,000
Total		\$18,076,920

SECURITY FORCES SMALL ARMS RANGE SOLUTION

1. Background. The Air National Guard (ANG) owns and operates twelve (12) small arms ranges, and the cost of maintenance and sustainment of these ranges is in excess of \$1,000,000 per year. The conditions of these small arms ranges continue to deteriorate over time and as a result of their age and frequent use are in constant need of maintenance and repair. The costs to maintain the current ranges outweigh the benefits of sustaining these ranges. Additionally, with only 12 ranges in operation within the ANG, we must heavily rely upon other agencies to utilize their small arms range space in order to prepare our forces for their wartime mission. The result is scheduling conflicts and in some cases expenses for the use of the small arms range. This becomes a daunting task to integrate our airman's training in small arms ranges owned and operated by outside agencies, both civilian and military. Every ANG airman is required to meet small arms training requirements prior to deployment in support of Overseas Contingency Operations, as well as maintaining small arms proficiency in support of the homeland defense mission. This shortfall affects all ANG warfighters; Security Forces (SF) is merely the Office of Primary Responsibility (OPR) for small arms ranges. As the OPR, ANG SF are tasked with the small arms training of all members of the ANG at every installation. The procurement of a modular small arms range at each installation will provide all ANG warfighters with the capability and immediate availability to complete required small arms training to meet mission requirements.

2. Source of Need. Critical capability shortfall identified at the ARC 2011 WEPTAC; lessons learned from domestic operations; Operations ENDURING FREEDOM and IRAQI FREEDOM / NEW DAWN.

3. Impact If Not Funded. Failure to procure the small arms modular range solution will significantly degrade mission effectiveness, increase SF personnel vulnerability and reduce Total Force readiness.

4. Units Impacted. All 93 ANG Wings will be impacted within the 54 States and US Territories.

5. Contractor. TBD.

6. Cost. PEC: 52625F

Units Required	Unit Cost	Program Cost
70 Modular Small Arms Range (3080)	\$4,100,000	\$287,000,000
Total		\$287,000,000

TACTICAL AIR CONTROL PARTY (TACP) DISMOUNTED INTEROPERABLE SENSOR ACQUISITION SUITE

1. Background. Dismounted Joint Terminal Attack Controllers (JTAC) currently use non-graphic GPSs, maps, and compasses to build situational awareness, navigate, and generate target coordinates because the currently fielded digital equipment is too heavy to carry on foot patrols. JTACs require extremely lightweight equipment to keep their weight burden manageable during dismounted foot patrols. Lightweight, digital, interactive mapping devices capable of providing situational awareness of air and ground forces, navigation, and target coordinate generation will shorten the kill chain timeline and mitigate collateral damage and fratricide. JTACs need the capability to simultaneously operate geospatial mapping, navigation and precision targeting software with the option to provide direct, near real time connectivity with supporting aircraft and ground forces. This device should be capable of operating for a minimum of 8 hours without loss of voice communications. This requirement also includes the ability to provide Sensor Point of Interest (SPI) and other J series messages on a common data linked system with or without the use of gateway. The device must be able to control multiple radio sets and power management options, USB interface options, removable solid state memory.

2. Source of Need. Lessons learned from Operations IRAQI FREEDOM and ENDURING FREEDOM; ANG Critical Capability ARC 2011 WEPTAC.

3. Impact If Not Funded. Air National Guard (ANG) JTACs will be unable to effectively navigate, maintain situational awareness and communicate digitally with supporting aircraft and will be reliant upon legacy technology to complete mission objectives. SPI and situational awareness capabilities can dramatically decrease required voice communications, decrease the propensity for target misidentification and expedite kinetic strikes on known targets.

4. Units Impacted.

113 ASOS Terre Haute, IN	146 ASOS Will Rodgers, OK	227 ASOS Atlantic City, NJ
116 ASOS Camp Murray, WA	147 ASOS Ellington Field, TX	238 ASOS Meridian, MS
118 ASOS New London, NC	148 ASOS Fort Indiantown Gap, PA	274 ASOS Syracuse, NY
122 ASOS Camp Beauregard, LA	165 ASOS Brunswick, GA	284 ASOS Smoky Hill, KS
124 ASOS Gowen Field, ID	169 ASOS Peoria, IL	

5. Contractor. TBD.

6. Cost. PEC: 502671F

Units Required	Unit Cost	Program Cost
336 DISAS (3010)	\$10,000	\$3,360,000
Total		\$3,360,000

TACTICAL AIR CONTROL PARTY (TACP) HANDHELD DAY/NIGHT LASER CODED SPOT TRACKER

1. Background. The ability to visually determine the location of pulse coded frequency lasers is paramount for confirming aircraft based lasers are tracking the same intended target which ground forces are designating. Currently, there is not a single source system fielded that allows the JTAC to physically see his PRF Laser point of designation. Recent technological advances have made this option available in man-portable configurations that allow Joint Terminal Attack Controllers (JTACs) to physically see lasers and aid them in producing accurate target locations. JTACs require a day and night capable system which will allow for the detection of Pulse Repetition Frequency (PRF) coded and Infrared (IR) lasers from marking devices. A lightweight, high sensitivity with integral Short Wave Infrared (SWIR) camera on a head mounted imaging system is required. The camera requires lens imaging array, camera electronics, display electronics, display and eye piece display so the camera can be integrated with a pair of ballistic goggles. This device should be capable of tracking and displaying an image to the JTAC of the aircraft and ground based PRF coded lasers and IR pointers out to 1.5 kilometers. It should be capable of tracking at least 3 separate PRF codes simultaneously. The device should weigh 2 pounds or less, fit into a standard 3 magazine sized pouch and capable of seeing through haze, fog, dust to produce distinguishable images of human sized objects.

2. Source of Need. Lessons learned from Operations IRAQI FREEDOM and ENDURING FREEDOM; ANG Critical Requirement ARC 2011 WEPTAC.

3. Impact If Not Funded. Without this type of technology, current JTACs will not possess the ability to "see" the point of designation of the ground based PRF lasers or that of controlled aircraft. Although there are some devices currently available that have laser "detection" capabilities, there are no devices that actually depict the beam itself and potential target location, and laser spillover. Additionally, with the introduction of handheld laser markers and the Tactics, Techniques and Procedures (TTPs) evolving to now use PRF coded lasers as a "mark" versus a "designation" for PGMs - JTACs will require the ability to better ensure the mark is in the correct location versus relying on bore sighting alone.

4. Units Impacted.

113 ASOS Terre Haute, IN	146 ASOS Will Rogers, OK	227 ASOS Atlantic City, NJ
116 ASOS Camp Murray, WA	147 ASOS Ellington Field, TX	238 ASOS Meridian, MS
118 ASOS New London, NC	148 ASOS Fort Indiantown Gap, PA	274 ASOS Syracuse, NY
122 ASOS Camp Beauregard, LA	165 ASOS Brunswick, GA	284 ASOS Smoky Hill, KS
124 ASOS Gowen Field, ID	169 ASOS Peoria, IL	

5. Contractor. FLIR Systems Inc, Wilsonville, OR, O'Gara Group Sensor Systems, Beavercreek, OH; Northrop Grumman, Orlando, FL.

6. Cost. PEC: 502671F

Units Required	Unit Cost	Program Cost
169 SWIR systems (3840)	\$50,000	\$8,450,000
Total		\$8,450,000

TACTICAL AIR CONTROL PARTY (TACP) LIGHTWEIGHT HANDHELD LASER TARGET RANGE FINDER

1. Background. Joint Terminal Attack Controllers (JTACs) are deployed to conduct full spectrum Close Air Support (CAS) and Intelligence, Surveillance, And Reconnaissance (ISR) missions in Operation NEW DAWN and Operation ENDURING FREEDOM. The ability to rapidly determine the precise location of targets nominated for prosecution by Close air Support (CAS) assets and/or observation by ISR assets is critical to ensuring proper effects are achieved while minimizing the risk of fratricide and/or collateral damage. JTACs rely on a Laser Range Finders (LRF) equipped with a digital magnetic compass and declinometer to identify and ensure the exact location of the target. The legacy LRF system is cumbersome and not conducive for use in the current high speed pace and rugged terrain in which JTACs are expected to operate. JTACs need LRF with integrated eye-safe magnified optics capable of tank sized targets out to 5 kilometers for day and 1 kilometer for night recognition. The eyepiece must be compatible with PVS14/15 Night Vision Devices (NVDs). Optimally it would integrate night aiming and illumination. The device should have RS-232 cables and USB interfaces and capable of wireless integration for future applications with a total weight less that 2 lbs.

2. Source of Need. ANG WEPTAC 2011 Critical Requirement; Lessons Learned Operation ENDURING FREEDOM and Operation IRAQI FREEDOM (OEF/OIF).

3. Impact If Not Funded. Dismounted JTACs will be forced to leave mission critical targeting equipment behind during dismounted operations to insure they maintain an agile, flexible, and lethal mission capability. The lack of precision targeting tools during close air support operations creates a potential for target location error and subsequently increases the risk of fratricide and/or civilian casualties and collateral damage.

4. Units Impacted.

113 ASOS Terre Haute, IN	146 ASOS Will Rodgers, OK	227 ASOS Atlantic City, NJ
116 ASOS Camp Murray, WA	147 ASOS Ellington Field, TX	238 ASOS Meridian, MS
118 ASOS New London, NC	148 ASOS Fort Indiantown Gap, PA	274 ASOS Syracuse, NY
122 ASOS Camp Beauregard, LA	165 ASOS Brunswick, GA	284 ASOS Smoky Hill, KS
124 ASOS Gowen Field, ID	169 ASOS Peoria, IL	

5. Contractor. STORM LRF / Company: Insight Tech, Londonderry, NH; L3 Communications, San Diego, CA.

6. Cost. PEC: 502671F

Units Required	Unit Cost	Program Cost
280 Laser Range Finders (3840)	\$18,000	\$5,040,000
Total		\$5,040,000

TACTICAL AIR CONTROL PARTY (TACP) RAPIDLY DEPLOYABLE JOINT OPERATIONAL COMMUNICATIONS SUITE

1. Background. The ability to communicate with military, law enforcement, and civilian frequencies over multiple frequency bands and with an adequate amount of power is essential for mission accomplishment in Federal contingencies, as well as homeland defense and disaster relief (i.e. Hurricane Katrina, flood relief operations) missions. The ability to package the PRC-117 multi-band tactical radio and the PRC-150 High Frequency (HF) tactical radio would allow Air Support Operations Squadrons (ASOS) to communicate with all disaster response agencies through line-of-sight voice communications, as well as over-the-horizon voice communications, and digital/Tactical Satellite (TACSAT) communications. The need exists for a modular container that can be installed, operated and maintained in either a strategic or highly mobile tactical deployment. The system should be integrated, and only require the user to provide power from any world-wide source an auto-sensing power distribution system, terminate antennae cables, and initial radio programming for net operations. The set up time for two-person operations should be ten minutes or less to be considered rapidly-deployable.

2. Source of Need. ANG Validated ARC 2011 WEPTAC Critical Requirement 2011; Lessons Learned Operation ENDURING FREEDOM and Operation IRAQI FREEDOM.

3. Impact If Not Funded. Without this funding the ASOS will rely on legacy systems that do not offer the reliability, sustainability, scalability and rapid deployment of this state-of-the-art communication technology. This will result in the failure to apply airpower at critical points on the battlefield in support of U.S. and coalition forces, as well as hamper disaster response efforts due to limitations incurred by the size and potential immobility of current communications systems.

4. Units Impacted.

111 ASOS Camp Murray, WA	146 ASOS Will Rodgers, OK	227 ASOS Atlantic City, NJ
113 ASOS Terre Haute, IN	147 ASOS Ellington Field, TX	238 ASOS Meridian, MS
116 ASOS Camp Murray, WA	148 ASOS Ft Indiantown Gap, PA	274 ASOS Syracuse, NY
118 ASOS New London, NC	165 ASOS Brunswick, GA	284 ASOS Smoky Hill, KS
122 ASOS Camp Beauregard, LA	168 ASOS Peoria, IL	
124 ASOS Gowen Field, ID	169 ASOS Peoria, IL	

5. Contractor. Automated Business Power, Gaithersburg, MD; Harris Corporation, Melbourne, FL.

6. Cost. PEC: 02671F

Units Required	Unit Cost	Program Cost
85 Radio Comm Suite (3840)	\$140,000	\$11,900,000
Total		\$11,900,000

TACTICAL AIR CONTROL PARTY (TACP) NEXT GENERATION HAND-HELD JOINT TERMINAL ATTACK CONTROLLERS (JTAC) RADIO

1. Background. Joint Terminal Attack Controllers (JTACs) are in an ever evolving communications intensive operating environment under direct combat conditions. The legacy dismounted JTAC radio components should be updated to the cutting edge for combat operations and allow for the greatest flexibility and adaptability to match ever changing operations. Currently fielded hand held radios require the addition of amplifiers in order to reach aircraft at distant positions. This adds additional weight to the already over burdened dismounted JTAC. JTACs require the ability to talk to aircraft and other remote sites which, in a non-permissive environment, precludes the JTAC from maintaining effective communications. This radio should be capable of multiple waveforms 2 to 512 MHz and known Video Downlink frequencies. This device should be capable of communicating with aircraft at approximately eight nautical miles at low to medium altitudes without adding an additional amplifier, should weigh three pounds or less, should possess network / Voice Over Internet Protocol (VOIP) potential with form functionality providing the smallest signature on the JTAC's body worn kit.

2. Source of Need. ANG Validated Critical Requirement ARC 2011 WEPTAC; Lessons Learned Operation ENDURING FREEDOM/Operation IRAQI FREEDOM.

3. Impact If Not Funded. JTACs will continue to rely on small radios incapable of effective communications at planning distances for non-permissive environments unless larger amplifiers are applied negating the hand-held size and weight benefits of the smaller radios.

4. Units Impacted.

113 ASOS Terre Haute, IN	147 ASOS Ellington Field, TX	227 ASOS Atlantic City, NJ
116 ASOS Camp Murray, WA	148 ASOS Fort Indiantown Gap, PA	238 ASOS Meridian, MS
118 ASOS New London, NC	165 ASOS Brunswick, GA	274 ASOS Syracuse, NY
122 ASOS Camp Beauregard, LA	169 ASOS Peoria, IL	284 ASOS Smoky Hill, KS
146 ASOS Will Rogers, OK		

5. Contractor. Thales Communication Inc. Clarksburg, MD; Harris Corporation, Fort Walton Beach, FL.

6. Cost. PEC: 502671F

Units Required	Unit Cost	Program Cost
336 Radios (3840)	\$40,000	\$13,440,000
Total		\$13,440,000

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MQ-1 and MQ-9



- **Intelligence, Surveillance, and Reconnaissance (ISR)**
- **Air Interdiction/Armed Reconnaissance**
- **Close Air Support to Ground Forces**
- **ANG MQ-1 / MQ-9 Units Provide 17% of the Total Fleet**

MQ-1 PREDATOR REMOTELY PILOTED AIRCRAFT

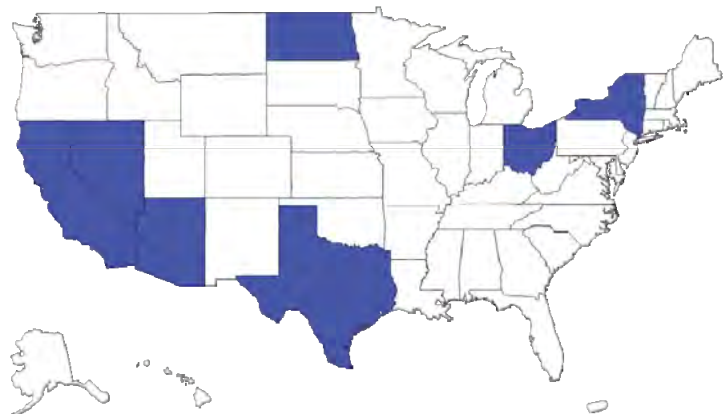
The MQ-1 Predator is a medium-altitude, long endurance, remotely piloted aircraft system. The MQ-1's primary mission is to act as an ISR asset, employing sensors to provide real-time data to commanders and intelligence specialists at all levels. The MQ-1 conducts interdiction and armed reconnaissance with a system integrating electro-optical, infrared laser designator and laser illuminator into a single sensor package. The aircraft can employ two laser-guided AGM-114 Hellfire missiles. Additionally, the MQ-1 is a theater asset for reconnaissance, surveillance and target acquisition organic to the Joint Force Air Component Commander's forces. The MQ-1 Predator is flown by North Dakota, Arizona, Texas, and California Air National Guard units. The Nevada ANG supports active duty MQ-1 operational and training



sorties. The Ohio ANG will operate the MQ-1 within the next FY.

MQ-9 REAPER REMOTELY PILOTED AIRCRAFT

The MQ-9 Reaper is a medium-to-high altitude, long-endurance, remotely piloted aircraft system. Because of its robust weapons payload capacity, long endurance and on-station times, the MQ-9's primary mission is hunter-killer operations against emerging targets. The MQ-9's secondary mission is to act as an ISR asset, employing sensors to provide real-time data to commanders and intelligence specialists at all levels. It is larger and more powerful than the MQ-1 Predator, and is designed to prosecute time-sensitive targets using its capabilities for precision targeting, array of precision-guided bombs and missiles, and long endurance to find, fix, and destroy or disable those targets. The New York Air National Guard operates the MQ-9 Reaper. The Nevada ANG supports active duty MQ-9 operational and training sorties.



MQ-1 and MQ-9 2011 Weapons and Tactics Conference

Critical Capabilities List

- Multi-Level Secure Communication Suite
- Collaborative Mission Execution Framework
- Independent and Redundant Data Architectures
- Squadron Operations Center Equipment Baseline
- Rapidly Deployable RPA Capability

Essential Capabilities List

- Sense and Avoid
- Improved Multispectral Targeting System
- Weapons Simulate Mode
- Increased Capability and Security for C-Band Operations
- Improved Electronic Protection

Desired Capabilities List

- Video Sharing
- Self Protection
- Podded Precision Guided Weapons
- Increased Remotely Operated Video Enhanced Receiver (ROVER) Range

MQ-1/9

EXECUTIVE SUMMARY

Modernization Priority Profiles (\$ Million)

Program	2013	2014	2015
Multi-Level Secure Communications Suite	- \$5.70 ³	\$13.80 ² -	\$36.00 ² -
Collaborative Mission Execution Framework	\$8.40 ² \$3.60 ⁴	- -	- -
Independent and Redundant Data Architectures	\$10.50 ²	\$4.80 ²	-
Squadron Operations Center (SOC) Baseline	\$2.50 ²	\$4.60 ²	\$12.00 ²
Rapidly Deployable RPA Capability	\$28.50 ²	\$64.00 ²	-

Notes: ¹ 3840 Appropriation ² 3010 Appropriation ³ 3600 Appropriation ⁴ 3080 Appropriation

- Multi-Level Secure Communications Suite - Provides the ability for tactical aircrew to send and receive vital, time-sensitive information to both command and control (C2) agencies and other battlefield entities.
- Collaborative Mission Execution Framework - Provides the ability for aircrew and intelligence personnel to gain and maintain situational awareness in today's rapidly evolving battlespace hinges on a robust, redundant, and flexible digital network-based architecture.
- Independent and Redundant Data Architectures - Provides the ability for tactical aircrew to gain and maintain situational awareness through independent and redundant digital network-based connectivity reducing the reliance on non-combat related networks.
- Baseline Squadron Operations Center (SOC) equipment - Provides ANG SOC's with standardized equipment to meet newly-formed Air Force SOC baseline requirements.
- Rapidly Deployable RPA Capability - Provides the ability to rapidly deploy MQ-1 and MQ-9 CONUS and OCONUS in support of Federal and State taskings.

MQ-1 / MQ-9 MULTI-LEVEL SECURE COMMUNICATIONS SUITE

1. Background. Currently, both MQ-1 and MQ-9 lack sufficient on-board and off-board means of communication to allow reliable mission accomplishment. The Ground Control Station (GCS) is currently limited to utilizing a phone for extended communications and has no extended radio capabilities. Both aircraft have a single on-board radio that has significant limitations in terms of antenna placement and function. Effective employment of air power requires sufficient means of communication to allow tactical aircrew to send and receive vital, time-sensitive information to both command and control (C2) agencies and other battlefield entities. Operators require a multi-level secure communications suite for in-theater radio communications. This suite must include capability for all mission related voice communications, be pilot selectable and improve aircraft antennas. The ANG has a requirement to provide combat support to current Central Command missions. Effective support to ground forces requires reliable communication of mission-critical information between all tactical assets. Additionally, the ANG must support emerging missions in other COCOMs and CONUS-based state and Federal missions. IP-based systems can tie into existing architecture and enable leverage of existing communication capabilities. Integration of this system should include single-point receive capability, but may include multiple collect microphones due to certification and accreditation reasons based on which network or multiple networks an IP-based system utilizes.

2. Source of Need. 2009 WEPTAC Critical RD&A Requirements List, 2010 WEPTAC Critical RD&A Requirements List.

3. Impact If Not Funded. MQ-1 and MQ-9 will be limited in their ability to provide effective real-time support to ground forces in theater. Emerging missions will be significantly hampered by the lack of flexibility of a severely limited communications suite.

4. Units Impacted.

119 WG Fargo, ND	163 RW March ARB, CA	178 FW Springfield, OH
147 RW Ellington Field, TX	174 FW Syracuse, NY	214 RS Davis-Monthan AFB, AZ

5. Contractor. General Atomics-Aeronautical Systems, Inc., San Diego, CA.

6. Cost. PEC: 53219F

Required Units	Unit Cost	Program Cost
1 2 nd Radio NRE (3600)	\$3,600,000	\$3,600,000
1 GCS Intercom NRE (3600)	\$2,100,000	\$2,100,000
23 GCS Intercom Mod Kits (3010)	\$600,000	\$13,800,000
120 2 nd Radio Mod Kits (3010)	\$300,000	\$36,000,000
Total		\$55,500,000

MQ-1 / MQ-9 COLLABORATIVE MISSION EXECUTION FRAMEWORK

1. Background. The MQ-1 and MQ-9 weapons systems include not only the aircraft and ground control station but a Remotely Piloted Aircraft Squadron Operations Center (RSOC) to execute the tasked missions. The RSOC requires a multi-level, collaborative, and integrated system to ensure combat effectiveness. The ability for aircrew and intelligence personnel to gain and maintain situational awareness in today's rapidly evolving battlespace hinges on a robust, redundant, and flexible digital network-based architecture. The fusion, synchronization, and simultaneous access of real-time voice, video, and data are often the difference between mission success and failure. The MQ-1/9 enterprise currently lacks a multi-level collaborative, fused framework that effectively supports the warfighter. The inability of our current framework to display, share, transfer, and filter mission critical data creates a potential and realized weakness (and resulting mission failure) in today's most requested combat asset. This system, as part of the RSOC Program of Record, should be a real-time, dynamic, collaborative, data fusion architecture (e.g. SIRIS, Zeus, Cursor-on-Target, Google Earth™, DIB) that allows full access to all mission critical information by aircrew, exploiters, supported units and potential HHQ decision makers. This system should be accessible via the Global Information Grid from austere locations with limited bandwidth/connectivity. This system must be Unmanned Aerial System Command and Control Initiative compliant and provide development potential to meet emerging needs.

2. Source of Need. 2008 ARC WEPTAC Essential RD&A Requirements List, 2009 ARC WEPTAC Essential RD&A Requirements List, 2010 ARC WEPTAC Proposed Action Item, RSOC Capabilities Description Document.

3. Impact If Not Funded. MQ-1/9 mission effectiveness will continue at current state, with significant mission degradation unless the RPA community receives a collaborative mission execution framework. Future contested or degraded combat environments may experience mission failure due to lack of fused information available to all players.

4. Units Impacted.

119 WG	Fargo, ND	163 RW	March ARB, CA	178 FW	Springfield, OH
147 RW	Ellington Field, TX	174 FW	Syracuse, NY	214 RS	Davis-Monthan AFB, AZ

5. Contractor. TBD.

6. Cost. PEC: 53219F

Required Units	Unit Cost	Program Cost
1 RPA Fusion Engine Integration (3080)	\$3,600,000	\$3,600,000
6 Fusion Engine Installations (3010)	\$1,400,000	\$8,400,000
Total		\$12,000,000

MQ-1 / MQ-9 INDEPENDENT AND REDUNDANT DATA ARCHITECTURES

1. Background. The MQ-1 and MQ-9 weapons systems are unique as a tactical airpower asset, in that they require ground-based systems to effectively operate. The ability for the tactical aircrew to gain and maintain situational awareness in today's battlefield hinges on digital network-based connectivity. The presence of this connectivity is often the difference between mission success or mission failure. The MQ-1 and MQ-9 currently lacks independent and redundant data architectures to maximize uninterrupted connectivity. Reliance on other agencies for sustainment and control of the required network connections signifies a potential and often realized weakness, resulting in mission failure. This effort provides squadron-level direct connection and control over current systems, in addition to future systems that are installed as mission enablers. The ANG has a requirement to provide combat support to current Central Command missions. Effective support to ground forces requires reliable connectivity to mission-critical network systems. Additionally, this capability will allow significant flexibility as the ANG supports emerging missions in other AORs and CONUS-based State and Federal missions. This requires a separate Point of Presence (PoP) for all tactical networks that is independent of normal base-level communications squadron control. Local Remotely Piloted Aircraft leadership maintains complete control over this PoP.

2. Source of Need. 2009 WEPTAC Critical RD&A Requirements List, 2010 WEPTAC Critical RD&A Requirements List, 2010 ARC WEPTAC Critical Requirements List.

3. Impact If Not Funded. MQ-1 and MQ-9 mission effectiveness will continue to be limited resulting in significant mission degradation and unnecessarily lengthy periods of non-connectivity to this mission critical capability.

4. Units Impacted.

119 WG	Fargo, ND	163 RW	March ARB, CA	178 FW	Springfield, OH
147 RW	Ellington Field, TX	174 FW	Syracuse, NY	214 RS	Davis-Monthan AFB, AZ

5. Contractor. TBD.

6. Cost. PEC: 53219F

Required Units	Unit Cost	Program Cost
3 Dual Diverse Infrastructure (3010)	\$2,100,000	\$6,300,000
6 DISA Service Delivery Point (SDP) (3010)	\$700,000	\$4,200,000
6 RPA DMZ (3010)	\$800,000	\$4,800,000
Total		\$15,300,000

MQ-1 / MQ-9 SQUADRON OPERATIONS CENTER BASELINE

1. Background. The Remotely Piloted Aircraft Squadron Operations Center (RSOC) is the critical interface between the Ground Control Station (GCS) controlling the aircraft and the network architecture necessary to command and control the aircraft via Remote-Split Operations (a.k.a. “reachback operations”). One main purpose of the RSOC is to fuse data and information for aircrew reference and disseminate resultant intelligence to various user agencies and authorities. All information, to include video feed, intelligence analysis and necessary networking must flow through the RSOC, where it is assimilated analyzed, and fused with other critical data prior to reaching the intended user. The infrastructure provided by the RSOC hosts up to five GCSs, consisting of operations and intelligence supervision, intelligence analysts, weather personnel, and other critical personnel, systems and subsystems. Currently, the Air Force and Air Combat Command have not programmed for adequate procurement funding to ensure that ANG RSOCs meet newly formed baseline requirements. Currently, ANG MQ-1 and MQ-9 units have an RSOC with similar, but individualized configurations. In order to continue to be supported by the RSOC System Program Office (SPO), the ANG must modernize each RSOC to Air Force baseline standards.

2. Source of Need. 2011 WEPTAC Critical RD&A Requirements List based on USCENCOM mission requirements and accreditation of the SPO’s baseline RSOC as a weapons system.

3. Impact If Not Funded. MQ-1/MQ-9 units will be unable to upgrade existing RSOCs to meet the baseline SPO requirement, resulting in potential loss of combat capability and logistical / contracting support. New ANG MQ-1 / MQ-9 units will not have adequate resourcing to purchase and install an RSOC necessary to meet initial and final operations capability requirements.

4. Units Impacted.

119 WG Fargo, ND	163 RW March ARB, CA	178 FW Springfield, OH
147 RW Ellington Field, TX	174 FW Syracuse, NY	214 RS Davis-Monthan AFB, AZ

5. Contractor. TBD.

6. Cost. PEC: 53219F

Required Units	Unit Cost	Program Cost
1 RSOC Configuration Baseline (3010)	\$2,500,000	\$2,500,000
6 RPA SOC Modernization (3010)	\$600,000	\$3,600,000
6 RPA SOC Upgrade Kits(3010)	\$1,400,000	\$8,400,000
2 RSOC FTU Modernization Kits (3010)	\$2,300,000	\$4,600,000
Total		\$19,100,000

MQ-1 / MQ-9 RAPIDLY DEPLOYABLE RPA CAPABILITY

1. Background. The ability to rapidly deploy an MQ-1 or MQ-9 from one location in the CONUS to another (CONUS or OCONUS) does not exist in the ANG. Rapidly deployable Remotely Piloted Aircraft capability will enable support to both Federal and State tasking. Both MQ-1 and MQ-9 can provide mission commanders, first responders and on scene leaders at various levels critical, life-saving information in real or near-real time as they respond to crisis on a national or international stage. This capability will allow critical integrated training for ANG/AFRC RPA crews and is crucial to the long-term tactical development and relevancy of this community. Each unit should have a fully deployable MQ-1 or MQ-9 system. This will include, but not be limited to a mobile Dual Control Ground Control Station, Ground Data Terminals (GDTs), deployable towers on which to mount the GDTs, four aircraft, along with all associated operational and maintenance equipment to support flight operations at an austere airfield for up to two weeks. A capability like this currently exists in Air Force Special Operations Command.

2. Source of Need. 2011 WEPTAC Critical RD&A Requirements List based on Air National Guard mission requirements.

3. Impact If Not Funded. MQ-1 and MQ-9 ANG units will continue to lack sufficient integrated training in support of potential Federal taskings. ANG units will also lack the ability to respond to taskings as an independent entity. The agility and flexibility provided by this capability will greatly enhance each squadron's usefulness to both the State mission and the Total Force.

4. Units Impacted.

119 WG	Fargo, ND	163 RW	March ARB, CA	178 FW	Springfield, OH
147 RW	Ellington Field, TX	174 FW	Syracuse, NY	214 RS	Davis-Monthan AFB, AZ

5. Contractor. TBD.

6. Cost. PEC: 53219F

Required Units	Unit Cost	Program Cost
5 Launch and Recovery GCS (3010)	\$4,300,000	\$21,500,000
5 Ground Data Terminals (3010)	\$1,400,000	\$7,000,000
20 MQ-1 Aircraft sensors (3010)	\$3,200,000	\$64,000,000
Total		\$92,500,000



Simulation



- **Distributed Mission Operations (DMO)**
- **Advanced Simulator Development**
- **Range Instrumentation**

Innovation and agile technology integration are hallmarks of the Air National Guard's (ANG) program of squadron level simulators and trainers to meet specific ANG warfighter requirements. The devices span the entire spectrum from high fidelity to a family of micro simulators. As part of the Guard's "fly before you buy" policy, both flight and mission crew simulator proofs of concept are constructed in partnership with government technology development centers and industry. This approach ensures that production decisions are made only after evaluation by ANG aircrew; resulting in reduced risk, cost and schedule.



Major programs include the KC-135 Boom Operator Simulation System (BOSS) in cooperation with Air Force Materiel Command and the Army's Program Executive Office, Simulation, Training and Instrumentation organization, the next generation F-16C Full Combat Mission Trainer (FCMT) and the A-10C Full Mission Trainer (FMF). Fielded micro simulators include the MQ-9 Reaper Mission Training Device

(MTD) and the KC-135 Micro BOSS (μ BOSS). Programs currently in work include the Advanced ANG JTAC Training System (AAJTS) and C-130 / KC-135 / C-27 Multi Mission Crew Trainer (MMCT).



Live - Virtual - Constructive architectures, supported by Distributed Mission Operations (DMO), remains a key component of all ANG training systems. The Distributed Training Operations Center (DTC), located at the 132nd FW, provides the operational environment for DMO by linking a wide array of flight and mission crew simulators at Guard, AFRC and active USAF units.

The ANG training range community strives to continuously modernize its equipment and infrastructure to support all current weapon systems in the DoD inventory. As new systems are developed, such as the F-22, F-35, the Joint Direct Attack Munition (JDAM), improved Precision Guided Munitions (PGM), Airborne Lasers (ABL), Remotely Piloted Vehicles (RPS) and Information Warfare, range modernization must keep pace. The constant evolution of these technologies requires new training space, equipment, infrastructure and instrumentation to evolve and remain relevant.



Simulation, Distributed Mission Operations (DMO) and Range Instrumentation 2011 Weapons and Tactics Conference *

Critical Capabilities List

Simulation & DMO:

- C2 AOC - Communications System Training Lab
- C2 ADS - Battle Control Center (BCC) DMO
- Guardian Angel - Scenario Training Suite
- Special Tactics - Training Enhancement Suite

Ranges:

- Rangeless P5 CTS Training Pods
- Mobile High Fidelity Threat Emitters
- High Fidelity Targets - Multispectral Capability
- Moving Targets - High Fidelity, Realistic, IR Significant, Dynamic
- Communications and Tactical Data Link Architecture

Essential Capabilities List

Simulation & DMO:

- C2 AOC - Airborne ISR Simulator
- C-130J - Advanced Squadron Level Simulator
- C-27J - Squadron Level High Fidelity Full Motion Simulator
- HH-60G - Distributed Mission Operations (DMO) Compatible T-BOSS Simulators
- KC-135R - Boom Operator Simulation System (BOSS)

- Security Forces - Combat Training Simulator
- TACP - JTAC Simulation Suite for DMO and Stand Alone Simulation
- ASOC - Simulation Suite for DMO and Stand Alone Simulation
- Space - Range Closed Loop Environment (RCLE) Trainer

Ranges:

- IR MANPAD Threat Simulators
- WISS/JAWSS Sustainment / Upgrade

Desired Capabilities List

Simulation & DMO:

- C-130H - Distributed Mission Operations (DMO) H2, H3 and J Simulator
- HC-130P/N - Visual Threat Recognition and Avoidance Trainer (VTRAT)
- HC-130P/N - Distributed Mission Operations (DMO) Weapon System Simulators
- F-16C - Simulation Training Device Upgrade
- KC-135R - Advanced Squadron Level Simulator (ASLS) Systems

Ranges:

- Range - GPS Jamming Capability
- Range - UAS/RPA Surrogate Operations and Support

* Note: Simulation and Distributed Mission Operations did not have a separate breakout session at WEPTAC 2011. Capabilities are extracted from the referenced tab and weapon system, and repeated in this Tab for clarity.

SIMULATION SYSTEMS AND DISTRIBUTED MISSION OPERATIONS EXECUTIVE SUMMARY

Modernization Priority Profiles (\$ Million)

Program	2013	2014	2015
Simulation and DMO			
JTAC Simulation and DMO Training and Rehearsal System	\$3.60 ⁴	\$3.60 ⁴	-
GA Scenario Training Suite	-	\$1.20 ⁴	-
ST Training Enhancement Suite	\$1.20 ⁴	\$1.40 ⁴	-
BCC Distributive Mission Operations	\$2.00 ⁴	\$2.00 ⁴	\$2.00 ⁴
Communications Training Lab	\$0.55 ¹	-	-
C-130J/KC-135R Advanced Squadron Level Simulator	\$2.00 ² \$6.50 ³	\$9.30 ² -	\$18.60 ² -
KC-135 BOSS	\$29.90 ²	-	-
Ranges			
“Rangeless” Air Combat Maneuvering Instrumentation	\$27.43 ²	-	-
Mobile High Fidelity Threat Simulators	\$1.00 ¹ \$2.30 ⁴	\$1.00 ¹ -	\$0.55 ¹ \$16.00 ⁴
High Fidelity Surrogate Targets	\$2.10 ¹	\$2.10 ¹	\$2.10 ¹
Moving Targets	\$5.32 ¹	\$5.32 ¹	\$5.32 ¹
Comm & Datalink Architecture Support	\$2.13 ¹ \$2.77 ⁴	\$1.43 ¹ \$2.77 ⁴	\$1.42 ¹ \$2.78 ⁴

Notes: ¹ 3840 Appropriation ² 3010 Appropriation ³ 3600 Appropriation ⁴ 3080 Appropriation

Simulation and DMO

- Joint Terminal Attack Controller (JTAC) Simulation and Distributed Mission Operations (DMO) Rehearsal System - Provides JTACs both a robust and stand alone DMO capable simulation system.
- Guardian Angel Scenario Training Suite - Provides a simulator to practice Alternate Insertion / Extraction (AIE) tasks in a controlled environment.
- Special Tactics Training Enhancement Suite - Provides a simulator to practice Alternate Insertion / Extraction (AIE) tasks in a controlled environment.
- Battle Control Center (BCC) Distributive Mission Operations (DMO) - Provides Live, Virtual, and Constructive Operational Training Flight Plan to achieve and maintain combat mission readiness, improve training capabilities, and effectively integrate with joint, interagency and coalition partners to support Homeland Defense (HLD) and Aerospace Control Alert (ACA) training.

- Communications Training Lab - Provides network operators capability to train realistically on various network configurations without disrupting ongoing real-world operations.
- C-130J / KC-135R Advanced Squadron Level Simulator (ASLS) System - Provides up to 23 KC-135 and C-130 reduced footprint, high fidelity flight deck simulators.
- KC-135 Boom Operator Simulation System (BOSS) - Provides ANG tanker units with 17 very high fidelity, immersive aircraft pod simulators for continuation and mission rehearsal training.

Ranges

- “Rangeless” Air Combat Maneuvering Instrumentation (ACMI) - Provides 189 P5 pods to complete ANG conversion to “rangeless” ACMI configuration.
- Mobile High Fidelity Threat Simulators - Provides realistic EW threat training on a regional level for ANG units for home station training and during deployments to CRTCs.
- High Fidelity Surrogate Targets - Provides realistic target surrogates to replicate real world complex target sets for target identification and acquisition training.
- Moving targets - Provides moving targets that are dynamic, high fidelity, IR significant and approved for laser operations for aircrew and JTAC training.
- Communications and Tactical Datalink Architecture Support - Provides realistic communications and datalink immersive environment at the critical nodes in the range training infrastructure.

JOINT TERMINAL ATTACK CONTROLLERS (JTAC) SIMULATION AND DISTRIBUTED MISSION OPERATIONS TRAINING AND REHEARSAL SYSTEM

1. Background. JTACs and Air Support Operations Centers (ASOCs) have currently fielded simulators which are limited to stand alone training capability only. Training requirements are rapidly approaching the point where the lack of live fly air assets will reduce JTAC's and ASOC's ability to maintain Combat Mission Readiness (CMR) training requirements. There is a need to have a Distributed Mission Operations (DMO) connected simulator at each squadron in order to facilitate the training requirements. This simulator should have both stand alone and DMO capabilities. This should be a fully functioning end item simulation system to conduct duty position part task training consisting of a multi-channel visual display system including image generators, screens and projectors; a robust Instructor Operating Station (IOS) with scenario generation capability; high resolution visual models and terrain data bases; associated hardware and software. The IOS should include functionality to access both virtual and constructive forces. A Simulator Operator's workstation should be composed of computer hardware and software to facilitate the configuration of each student station from an operating console and environment generation capabilities required for standalone event control. The Instructor station should also provide a means to inject stimuli for networked events as part of the overall DMO White Force and provide interaction through environment generation capabilities.

2. Source of Need. AFI 13-112v1 JTAC, AFI 13-114v1.

3. Impact If Not Funded. Without a simulation system for mission rehearsal, combat efficiency will be impacted and CMR capable operators will not be ready for deployments.

4. Units Impacted.

111 ASOS Camp Murray, WA	146 ASOS Will Rogers, OK	227 ASOS Atlantic City, NJ
113 ASOS Terre Haute, IN	147 ASOS Ellington Field, TX	238 ASOS Meridian, MS
116 ASOS Camp Murray, WA	148 ASOS Fort Indiantown Gap, PA	274 ASOS Syracuse, NY
118 ASOS New London, NC	165 ASOS Brunswick, GA	284 ASOS Smoky Hill, KS
122 ASOS Camp Beauregard, LA	168 ASOS Peoria, IL	123 STS Louisville, KY
124 ASOS Gowen Field, ID	169 ASOS Peoria, IL	125 STS Portland, OR

5. Contractor. 902 MSG, Randolph AFB, TX.

6. Cost. PEC: 52671

Units Required	Unit Cost	Program Cost
18 Simulation & Rehearsal Sys (3080)	\$400,000	\$7,200,000
Total		\$7,200,000

GUARDIAN ANGEL SCENARIO TRAINING SUITE

1. Background. Guardian Angel (GA) personnel are required to maintain a high level of proficiency in a wide variety of skill sets that often entail logistical and financial challenges due to availability of aircraft and ranges. Personnel deploy from many different US and Coalition helicopter and tilt rotor aircraft using multiple Alternate Infiltration Extraction (AIE) techniques. Training in all of these dangerous but necessary AIE techniques is required to ensure survival GA personnel as they deploy into battle. GA personnel must practice confined space rescue, technical rescue, high angle rescue, and other special procedures in a variety of non-permissive environments and conditions (fire, smoke, darkness, extreme noise, etc). These AIE/ Tactical Simulation towers will allow personnel to train year round for much less than the cost of training with non-organic rotor-wing aircraft. Additionally, these towers allow for the use of fire, smoke, and other real world risk factors that simply cannot be performed when using real rotor-wing assets.

2. Source of Need. ARC WEPTAC Validated Critical Requirement; Lessons Learned Operation ENDURING FREEDOM, Operation IRAQI FREEDOM; Mission Required Equipment UTCs.

3. Impact If Not Funded. Mission accomplishment may be jeopardized when lack of proper training is required to get to the area of operation, or perform additional tasks on site during rescue operations.

4. Units Impacted.

106 RQW Gabreski Field, NY 129 RQW Moffett Federal Airfield, CA 176 WG JB Richardson AFB, AK

5. Contractor. TBD.

6. Cost. PEC: 53130F

Units Required	Unit Cost	Program Cost
1 Scenario Training Suite (3080)	\$1,200,000	\$1,200,000
Total		\$1,200,000

SPECIAL TACTICS TRAINING ENHANCEMENT SUITE

1. Background. Special Tactics (STS) Combat Controllers (CCTs), Pararescue men (PJs) and Special Operations Weather Teams (SOWT) are required to maintain a high level of proficiency in a wide variety of skill sets that often entail logistical and financial challenges due to availability of aircraft and ranges. Personnel deploy from many different US and Coalition helicopter and tilt rotor aircraft using multiple Alternate Infiltration/Extraction (AIE) techniques. Training in all of these dangerous but necessary AIE techniques is required to ensure survival of CCT, PJ, and SOWT personnel as they deploy into battle. STS personnel must practice confined space rescue, technical rescue, high angle rescue, and other special procedures in a variety of non-permissive environments and conditions (fire, smoke, darkness, extreme noise, etc). These AIE/Tactical Simulation towers will allow personnel to train year round for much less than the cost of training with non-organic rotor-wing aircraft. Additionally, these towers allow for the use of fire, smoke, and other real world risk factors that simply cannot be performed when using real rotor-wing assets. Additionally, increased reliance on small arms during OEF engagements has re-emphasized the need to maintain instinctual shooting skills.

2. Source of Need. ANG Validated Critical Requirement; Lessons Learned Operation ENDURING FREEDOM / Operation IRAQI FREEDOM (OEF/OIF).

3. Impact If Not Funded. Failure to provide STS CCT, PJ and SOWT personnel with a specialized AIE Simulation Training Tower will result in fewer training opportunities and less realistic training, leading to decreased mission capability and increased potential for injury or death of STS personnel.

4. Units Impacted.

123STS Louisville IAP, KY 125STS Portland IAP, OR

5. Contractor. Peak Corporation, Butte, MT; Meggitt Training Systems, Suwanee, GA.

6. Cost. PEC: 53130F

Units Required	Unit Cost	Program Cost
1 AIE Tower (3080)	\$1,200,000	\$1,200,000
2 Small Arms Trainers (3080)	\$500,000	\$1,000,000
2 JTAC Simulators (3080)	\$400,000	\$800,000
Total		\$2,600,000

BATTLE CONTROL CENTER (BCC) DISTRIBUTED MISSION OPERATIONS

1. Background. Battle Control Centers require the capability to train in a live, virtual, and collaborative environment to achieve and maintain combat mission readiness. Addition of the Distributed Mission Operations (DMO) Suite, comprised of the Battlefield Control System - Fixed (BCS-F) Shadow System, Simulation Generator, Communications Suite, and connectivity to the Distributive Missions Operations Network (DMON) through the Distributive Training Operations Center (DTC) will provide the necessary training environment. The Hawaiian Regional Aerospace Operations Center (HRAOC) has no capability to train in a live, virtual or collaborative environment. DMO capability will enable training across a wide spectrum of mission areas including detection/identification, weapons engagement, and battle staff functions in a realistic mission environment. DMO connectivity will network all four Air Defense Sectors with Aerospace Control Alert (ACA) mission training centers and support Homeland Defense and ACA training. Employment of DMO at the BCC will enable training in all air defense mission sets including DoD Support to Civil Authorities, Homeland Security/Homeland Defense, Maritime Defense and Aerospace Control Alert.

2. Source of Need. DODD 1322.18, AFI 36-2251, USAF Live, Virtual, and Constructive Operational Training Flight Plan, and CONPLAN 3310.

3. Impact If Not Funded. Command and control (C2) entities will be unable to maintain CMR status. Currently, live training events meet only 60% of controller requirements at Western Air Defense Sector (WADS) and Eastern Air Defense Sector (EADS). Live, virtual and collaborative training events account for 70% of activity at the Alaskan Regional Aerospace Operations Center (AKRAOC).

4. Units Impacted.

WADS McChord AFB, WA
EADS Rome, NY

HRAOC Wheeler Army Air Field, HI
AKRAOC JB Elmendorf-Richardson, AK

5. Contractor. TBD.

6. Cost. PEC: 0501311

Units Required	Unit Cost	Program Cost
NRE (3080)	N/A	\$4,000,000
4 DMO Suites (3080)	\$2,00,000	\$8,000,000
Total		\$12,000,000

AIR OPERATIONS CENTER (AOC) COMMUNICATIONS TRAINING LAB

1. Background. There is a long-standing deficiency in network training for AF network operators. Personnel work a diverse set of missions and cannot become experts in any of them without training on live or virtual networks. Air Communications Squadron (ACOMS) personnel are taught their craft in a classroom, but are unable to train extensively on live systems because of the potential risk to disrupt real-world operations. However, they must remain qualified and certified on critical peacetime and wartime knowledge, skills, and new or upgraded systems and tasks. The lack of capability to train realistically and interactively to maintain Combat Mission Readiness is severely degraded as a consequence. ACOMS Mission Qualification Training (MQT) has largely become on-the-job-training and learn as you go. Random experiences and periodic MAJCOM exercises are not sufficient to fulfill specific training goals. Training labs will greatly mitigate the deficiency. In addition it will provide training on commonly used tools and equipment in AF-specific environments, develop a better understanding of the AF network systems and enhance personnel capabilities and overall proficiency. The ANG and AFRC ACOMS units require a solution for a small training lab using VMWare to virtualize most of the physical equipment that make up Theater Battle Management Core Systems, routers, firewalls, switches and other critical network devices.

2. Source of Need. PAD 10-2, 13-1 AOCV1; AFI 33-115 V2.

3. Impact If Not Funded. Inability to conduct MQT and continuation training in a live or virtual environment significantly hinders the ability of ACOMS personnel to support their aligned Air Operations Center (AOC). Maintaining proficiency and combat capability will be degraded due to a lack of real-world training a training lab can provide. Training will largely depend on their civilian job experiences. Mitigation of any training deficiencies cannot be accomplished during actual operations under conditions unsuitable for teaching.

4. Units Impacted.

102 IW	Otis ANGB, MA	110 AW	Battle Creek, MI	157 AOG	Jeff Brks, MO
103AW	Bradley ANGB, CT	112AOS	State College, PA	183 FW	Springfield, IL
109AOG	Honolulu, HI	152AOG	Syracuse, NY		

5. Contractor. Commercial off-the-shelf (COTS) available from various sources.

6. Cost. PEC: 52672

Units Required	Unit Cost	Program Cost
8 Comm Training Suites (3840)	\$65,500	\$524,000
Total		\$524,000

C-130J / KC-135R ADVANCED SQUADRON LEVEL SIMULATOR (ASLS) SYSTEM

1. Background. Most Air National Guard (ANG) large aircraft equipped units have limited access to high fidelity flight deck simulators with Distributed Mission Operations (DMO) capability. While Air Mobility Command (AMC) has deployed C-17 and C-5 simulators to all equipped ANG units, KC-135 and C-130 units have few simulator resources available on station. To meet this shortfall, and in keeping with the Director, ANG's mandate that all units have at least some home station simulation capability, NGB/A5 is pursuing the ASLS program. The ASLS is a reduced footprint, high fidelity replication of the aircraft flight deck, including associated operating systems; six degree of freedom motion base; Instructor Operator Station (IOS); physics based air models; robust environment generation station and Air Reserve Component Network (ARCNet) Gateway. The ASLS will be equivalent to a Federal Aviation Administration (FAA) Level C+/D training system. The ASLS is unique in two ways. First, it is part of a family of modular ASLS encompassing four (4) weapons systems. By incorporating state of the art commercial technologies, the modular design of the ASLS will allow over 80% commonality among devices resulting in significant cost and schedule savings. Second, the design adopts a reduced footprint design with off board IOS to reduce acquisition and facility costs. Fully qualified aircrew at up to seventeen (17) ANG units will use the device for continuation, recurrency and upgrade training. In addition, commanders can tailor specific training scenarios to meet immediate aircrew requirements for mission rehearsal. Where appropriate, KC-135 units will collocate and network the ASLS with the KC-135 Boom Operator Simulation System (BOSS) also deployed by the ANG.

2. Source of Need. Critical capability shortfall identified at the 2011 ARC WEPTAC; AFI 36-2251.

3. Impact If Not Funded. In the absence of a squadron level, high fidelity device with DMO capability, ANG aircrews will have very limited ability to perform continuation and mission rehearsal training to meet specific unit tasking.

4. Units Impacted. Ten (10) KC-135 and seven (7) C-130 units.

5. Contractors. TBD.

6. Cost. PEC: 0401132F / 0405134F

Units Required	Unit Cost	Program Cost
NRE (3600)	N/A	\$6,500,000
10 KC-135 ASLS (3010)	\$4,200,000	\$42,000,000
7 C-130 ASLS (3010)	\$5,100,000	\$35,700,000
Total		\$84,200,000

KC-135R BOOM OPERATOR SIMULATION SYSTEM (BOSS)

1. Background. In order to meet a continuation training shortfall, the Air National Guard (ANG) is pursuing of a low cost, fully Distributed Mission Operations (DMO) capable, immersive boom operator simulator with a high fidelity replication of the boom pod, controls, receiver aircraft, and boom flight models, contact detection and out the window display. This device leveraged existing development of Air Education and Training Command's (AETC) Boom Operator Weapon System Trainer (BOWST) program software to minimize costs. The device is designed with a compact footprint to reduce building and facility costs. The ANG intends to procure seventeen (17) BOSS units that provide the same form, fit, and function characteristics of the aircraft. In addition, to meet the needs of fully qualified and experienced boom operators, the BOSS will have capabilities including Advanced Voice Recognition, Head Position Tracking, variable Ruddavator Control Profiles, and Enhanced Instructor Operator Station. The BOSS system will also include the dual use MicroBOSS (μ BOSS) debriefing station and stand alone desktop version of the BOSS. Utilizing replica controls, the μ BOSS uses the same operating software and models as the full size simulator. Twenty-five (25) μ BOSSs were procured by the Guard.

2. Source of Need. The Training System Requirements Analysis (TSRA); KC-135R BOSS SRD and 2011 ARC WEPTACT Essential Capability. This requirement addresses the remaining seventeen (17) production BOSS systems.

3. Impact If Not Funded. In the absence of squadron level, high fidelity devices with DMO capability, ANG boom operators will not have any on-station ability to perform continuation training. As aircraft training sortie availability declines, boom operators will not be able to maintain required levels of readiness.

4. Units Impacted. Seventeen (17) ANG KC-135 units will benefit from this training capability. In addition, the μ BOSS is deployed to all twenty-one (21) tanker squadrons.

5. Contractors. Proof of Concept (1): QuantaDyn Corp, Sterling, VA; 902 MSG/TD (AETC), Randolph AFB, TX. Production devices (17): TBD.

6. Cost. PEC: 0405134F

Units Required	Unit Cost	Program Cost
1 NRE (3010)	N/A	\$4,300,000
16 BOSS (3010)	\$1,600,000	\$25,600,000
Total		\$29,900,000

“RANGELESS” AIR COMBAT MANUVERING INSTRUMENTATION

1. Background. The next generation ACMI pod (P-5) provides “rangeless” instrumentation capability by leveraging global positioning system receivers, data recorders and on-board simulation technology to provide Air Combat Maneuvering Instrumentation (ACMI) training independent of ground infrastructure. This technology allows training to occur at any location to support unit home station and deployed training. It provides greater training to pilots by increasing development of situational awareness and more effective debriefing. Pods will be managed and sustained by CTRCs to avoid increasing O&M costs, and shipped to units for employment. Without this capability, ANG units must deploy to a CRTC to train with a traditional “tethered” ACMI system. The P-5 pod system reduces operations tempo while providing higher levels of more complex training. With the limited availability of traditional, part-time ANG pilots, and the high operations tempo being maintained, it is essential to maximize training opportunities. The Combat Air Force Combat Training Range Review Board has programmed 189 P-5 pods for the ANG. The ANG needs a total of 211 more pods to meet immediate requirements and complete transition to the “rangeless” system.

2. Source of Need. Ready Aircrew Program Tasking messages; ANG Training Ranges and Airspace Road Map, FY 10; ANG MD 10.01; ANG ACMI/EW CONOPS; CAF MNS 330-88 Improved Combat Training Space, 22 Sep 99 and is revision #5 to CAF ORD #305-76-I/II/III-H for P-5 Combat Training System, dated 29 July, 2004 (based upon TAF ROC 305-76, Improvements to TAF Ranges, validated 6 Dec 76).

3. Impact If Not Funded. Units will not have home station access to ACMI capability to meet training requirements. ANG units will have to deploy to receive this training because insufficient pods will be available to meet home station training requirements.

4. Units Impacted.

CRTC Alpena, MI	CRTC Savannah, GA
CRTC Gulfport, MS	CRTC Volk Field, WI

5. Contractor. Cubic Corp., San Diego, CA; Metric Systems, Ft Walton Beach, FL.

6. Cost. PEC: 27429

Units Required	Unit Cost	Program Cost
211 P-5 Pods (3010)	\$130,000	\$27,430,000
Total		\$27,430,000

RANGE MOBILE HIGH FIDELITY THREAT SIMULATORS

1. Background. The Air National Guard (ANG) has a shortfall in realistic Electronic Warfare (EW) threat training. To meet Ready Aircrew Program (RAP) tasking requirements, the ANG's Combat Readiness Training Centers (CRTC) ranges require realistic simulators to replicate a robust Integrated Air Defense (IADS) threat environment. These ranges have the airspace and real estate infrastructure necessary to fully utilize EW assets. These EW threat packages consist of three major components: Mobile Command and Control Unit (to provide regional support in moving current Joint Threat Emitters (JTE)); high fidelity threat surrogates (replicate physical threat system characteristics); and upgraded JTE Threat Emitter Units emitters (currently being re-bid by Air Combat Command). Acquisition of these systems will provide regional access to ANG units to accomplish realistic IADS training from home station and during deployments to the CRTCs through Distributed Mission Operations (DMO). Utilizing DMO technology, units will be able to link to geographically dispersed training assets. These systems provide combat aircrews with the most realistic electronic threat simulation possible (short of the real threat). This accurate re-creation of threat signals and vehicle characteristics will allow aviators to hone their initial EW skills and add increasingly difficult threat scenarios for a constantly changing challenge. Threat simulators will be tied into the Air Combat Maneuvering Instrumentation (ACMI) systems located at the CRTCs.

2. Source of Need. RAP Tasking messages; ANG Training Ranges and Airspace Roadmap, FY 10; ANG MD 10.01; WEPTAC 2011; ANG TRIC CONOPS.

3. Impact If Not Funded. Units will not have home station access to regional advanced EW capability to meet minimum training requirements.

4. Units Impacted.

CRTC Alpena, MI CRTC Savannah, GA
CRTC Gulfport, MS CRTC Volk Field, WI

5. Contractor. Northrop Grumman Corporation, Buffalo, NY; VT MILCON Chesapeake, VA.

6. Cost. PEC: 052634, 027429

Required Units	Unit Cost	Program Cost
2 Mobile C2Us (3080)	\$2,300,000	\$4,600,000
4 EW Emitters (3080)	\$8,000,000	\$32,000,000
9 Surrogate RDR (3840)	\$130,000	\$1,170,000
23 Surrogate TEL (3840)	\$60,000	\$1,380,000
TOTAL		\$39,150,000

RANGE HIGH FIDELITY SURROGATE TARGETS

1. Background. The Air National Guard (ANG) has a shortfall in realistic target identification and acquisition training. To meet Ready Aircrew Program (RAP) tasking requirements, the ANG's Primary Training Ranges require realistic target surrogates to replicate real world complex target sets. These ranges have the airspace and real estate infrastructure necessary to fully utilize surrogate assets. High value complex target arrays mimicking unique vehicles, tanks, mobile communication equipment and other targets requiring the physical characteristics to include visual footprint, density and heat signatures to simulate real systems. High Fidelity Surrogate target arrays used in conjunction with complex mission scenarios and advanced aviation targeting pods and electronic sensors provide a cost effective solution to provide both visual target density as well as targeting pod identification and acquisition associated with physical and heat signatures of real systems. Acquisition of these systems will provide local access to ANG units to accomplish realistic training from home station and during deployments to the Combat Readiness Training Centers (CRTCs). This accurate re-creation of target systems will allow aviators to hone their initial skills and add increasingly difficult training scenarios for a constantly changing challenge. These high fidelity target arrays will be used at Air National Guard Primary Training Ranges to support primary users (both air and ground forces) during all phases of training to include Air to Ground Gunnery, Laser Operations and Close Air Support training and exercises.

2. Source of Need. RAP Tasking Messages; ANG Training Ranges and Airspace Roadmap, FY 10; ANG MD 10.01; ARC WEPTAC 2011.

3. Impact If Not Funded. Units will not have home station access to high fidelity target capability to meet minimum training requirements.

4. Units Impacted. The following are ANG Primary Training Ranges:

Adirondack Range, NY	Airburst Range, CO	Atterbury Range, IN
Bollen Range, PA	Cannon Range, MO	Grayling Range, MI
Hardwood Range, WI	Jefferson Range, IN	McMullen Range, TX
Razorback Range, AR	Shelby Range, MS	Smoky Hill Range, KS
Townsend Range, GA	Warren Grove Range, NJ	

5. Contractor. Scientific Research Corporation; VT MILCON Chesapeake, VA.

6. Cost. PEC: 052634

Required Units	Unit Cost	Program Cost
90 High Fidelity Targets (3840)	\$70,000	\$6,300,000
Total		\$6,300,000

RANGE MOVING TARGETS

1. Background. Recent operations in the Area of Responsibility (AOR) have highlighted the need to train for strafe against moving targets. Currently, ranges are equipped to support and score traditional low / high angle strafe as well as tactical strafe against stationary soft and hard targets. The limited moving targets available on ranges today are slow moving targets that run parallel to a flight path optimized for helicopter training and do not provide a realistic target for fighters. To meet the requirement for realistic training these targets must be dynamic, high fidelity realism, Infra Red (IR) significant and be approved for laser operation. Air Combat Command's A3A division has further refined the requirement to include the approximate size of a sport utility vehicle traveling at speeds up to 40 MPH a distance of 1-2 non-contiguous miles with a minimum of a 5 NM radius of low altitude maneuvering airspace. War fighters require immediate feedback on attack results, so dry strafe on a range or in a Military Operating Area does not provide the appropriate level of realism. Moving targets will be a combination of data-links to provide live virtual and constructive training and expendable targets for live fire strafe.

2. Source of Need. ANG MD 10.01; ARC WEPTAC 2011, Range WG, F-16 WG, Joint Close Air Support WG.

3. Impact If Not Funded. Units will not be able to train appropriately for deployment taskings, first attacks against moving targets will be in combat. Combatant commanders will not have adequately trained forces.

4. Units Impacted.

Adirondack Range, NY	Airburst Range, CO	Atterbury Range, IN
Bollen Range, PA	Cannon Range, MO	Grayling Range, MI
Hardwood Range, WI	Jefferson Range, IN	McMullen Range, TX
Razorback Range, AR	Shelby Range, MS	Smoky Hill Range, KS
Townsend Range, GA	Warren Grove Range, NJ	

5. Contractor. Coastal Defense, Mill Hall, PA.

6. Cost. PEC: 052634

Required Units	Unit Cost	Program Cost
56 GPS Flight Systems (3840)	\$1,000	\$56,000
28 Remote Control Target Unit (3840)	\$35,000	\$980,000
28 Vehicle and Prep (3840)	\$20,000	\$560,000
TOTAL		\$1,596,000

RANGE COMMUNICATIONS AND TACTICAL DATA LINK (CTDL) ARCHITECTURE SUPPORT

1. Background. The Air National Guard (ANG) has a shortfall in realistic communications and data link immersive environment at the critical nodes in the range training infrastructure. To meet Ready Aircrew Program (RAP) tasking requirements, the ANG's Combat Readiness Training Centers (CRTC) and Primary Training Ranges (PTR) require realistic, standardized, full spectrum, immersive electronic training environment that includes appropriate levels of communications and data link systems. These ranges have the airspace and real estate infrastructure necessary to support every phase of ANG combat training from employment through After Action Review (AAR). These systems include radios, data links, radar acquisitions and display, global positioning system Target/Blue Force Trackers, Weapons Impact Scoring System / Joint Advance Weapons Scoring System; all of the systems required to replicate the operating environment and record/score employment and relay that in a useable format back to the warfighter. Acquisition of these systems will provide ANG units the ability to accomplish realistic full spectrum training from home station. This accurate re-creation of the electronic wartime operating environment, and recording of aircrew actions and performance, will allow aviators to hone their cockpit resource management skills and push their personal envelopes of task saturation prior to experiencing them on the battlefield. The systems will be located at the CRTCs and PTRs with distributed AAR to the squadron level.

2. Source of Need. RAP Tasking messages; ANG Training Ranges and Airspace Roadmap, FY 10; Training Range Infrastructure CONOPS FY 09, ANG MD 10.01; WEPTAC 2011

3. Impact If Not Funded. Units will not have home station access to operational levels of CTDL for daily and spin up training before deploying to support the Combatant Commanders.

4. Units Impacted.

Adirondack Range, NY	Airburst Range, CO	Atterbury Range, IN
Bollen Range, PA	Cannon Range, MO	Grayling Range, MI
Hardwood Range, WI	Jefferson Range, IN	McMullen Range, TX
Razorback Range, AR	Shelby Range, MS	Smoky Hill Range, KS
Townsend Range, GA	Warren Grove Range, NJ	

5. Contractor. Rockwell Collins, Midwest City, OK; Tactical Communications Group, Tewksbury, MA; L3COM, Orlando, FL; GPS Flight, Tukwila, WA; TBD.

6. Cost. PEC: 52634

Required Units	Unit Cost	Program Cost
12 LVT-2 Link 16 Radios (3080)	\$320,000	\$3,840,000
13 Joint Range Extension Systems(3840)	\$329,000	\$4,277,000
14 WISS/JAWSS Upgrades (3080)	\$200,000	\$2,800,000
56 Range Radios (3080)	\$30,000	\$1,680,000
14 GPS Flight Systems (3840)	\$50,000	\$700,000
TOTAL		\$13,297,000



Space & Cyber Warfare/ Information Operations



- Space Warning to Launch Range
- Operations Network Warfare Operations
- Influence Operations

SPACE OPERATIONS

The ANG's contribution to Air Force Space Command (AFSPC) space missions includes over 1,300 personnel within ten squadrons operating eight distinct weapon systems. These units support three of the four AFSPC functional mission areas. From the 137th Space Warning Squadron, which is the nation's sole provider of mobile, survivable and endurable ballistic missile warning for the defense of North America to the 148th Space Operations Squadron, which is responsible for command and control of 40% of the MILSTAR satellite constellation. The ANG is an indispensable enabler of the AFSPC space mission.



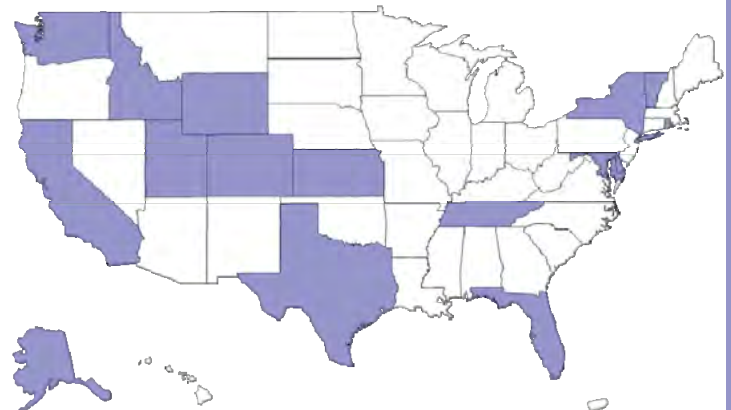
CYBER WARFARE AND INFORMATION OPERATIONS (CW/IO)



The ANG cyber warfare and information operations (CW/IO) force is made up of eight units in Delaware, Kansas, Maryland, Rhode Island, Texas, Utah, Vermont, and Washington. Together, they provide CW/IO capabilities supporting federal and state-level agencies, the Air Force, and combatant commanders, and by conducting cyberspace force application, cyberspace defense, cyberspace support, influence operations, and related planning activities. Many guardsmen participating in these missions draw

upon synergies with their related civilian careers, leveraging skills developed by high-tech companies such as Microsoft, Cisco and Google. Specific missions assigned to ANG units range from network vulnerability assessments to digital media/network analysis to full-spectrum cyber warfare support in both exercises and real world operations. They can execute many of their activities from home station as well as from a deployed environment.

In FY12, ANG cyber warfare and information operations units will continue to employ the Cyberspace and Critical Infrastructure Range (CCIR) for training, capability testing, and tactics, techniques and procedures (TTP) development. Remaining unfunded requirements prevent the ANG from further developing the CCIR capability and providing additional equipment to enhance offensive and defensive postures to counter adversarial TTPs.



Space and Cyber Warfare/ Information Operations (CW/IO) 2011 Weapons and Tactics Conference

Critical Capabilities List

Space:

- Eagle Vision
- Domain Infrastructure Capability Enhancement (DICE)

CW/IO:

- Cyber and Critical Infrastructure Range (CCIR)
- Adversary Replication Kit (ARK)
- Remote Access Toolkit (RAT)
- Immersive Telepresence For Distributed Operations (ITDO)
- Virtualized Cyber Environment (VCE)

Essential Capabilities List

Space:

- Transit Case Telemetry Station (TCeTS) for Launch in Austere Environments
- Range Closed Loop Environment (RCLE) Trainer

- Information Assurance Lab (IA Lab)
- NAVWAR Training Suite
- High Power Assembly

CW/IO:

- Cross Domain Solution
- Back-Up Generator
- Geosynchronous Road Mapping Technology Equipment

Desired Capabilities List

CW/IO:

- UPS Backup Battery
- Portable Video Display
- STO/Sensitive Compartmented Information Facility (SCIF) (KS and MD)
- Maintenance Facility (TN)
- Cyber Ops Building (ID and DE)

Space:

- Signals Mapping Equipment

SPACE AND CYBER WARFARE/ INFORMATION OPERATIONS (CW/IO) EXECUTIVE SUMMARY

Modernization Priority Profiles (\$ Million)

Program	2013	2014	2015
Space			
Eagle Vision	\$16.00 ⁴	-	-
Domain Infrastructure Capability Enhancement (DICE)	\$2.03 ⁴	-	-
CW/IO			
Cyber and Critical Infrastructure Range (CCIR)	\$0.39 ¹ \$3.55 ⁴	-	-
Adversary Replication Kit (ARK)	\$1.82 ⁴	-	-
Remote Access Toolkit (RAT)	\$0.67 ⁴	-	-
Immersive Tele-presence For Distribution Operations (ITDO)	\$2.56 ⁴	-	-
Virtualized Cyber Environment (VCE)	\$1.75 ⁴	-	-

Notes: ¹ 3840 Appropriation ² 3010 Appropriation ³ 3600 Appropriation ⁴ 3080 Appropriation

Space

- Eagle Vision - Provides a deployable commercial imagery direct downlink ground station with unclassified imagery for combat operations, mission planning, intelligence preparation of battlespace, predictive battlespace awareness, geospatial awareness, homeland defense and emergency management.
- Domain Infrastructure Capability Enhancement (DICE) - Provides capability for Command and Control Squadrons (CACS) to equip facilities, provide independent network access, global situational awareness, and information collaboration capabilities for civilian and military forces.

Cyber Warfare/Information Operations

- Cyber and Critical Infrastructure Range (CCIR) - Provides the ability to prepare personnel in specialized "cyber-centric" activities supporting the development of new tactics, techniques, and procedures in a net-centric environment.
- Adversary Replication Kit (ARK) - Comprises a highly specialized commercial-off-the-shelf (COTS) software and hardware that provides the ability to simulate the multitude of threats facing the warfighter in the IO arena to include the cyber domain.
- Remote Access Toolkit (RAT) – A specialized commercial-off-the-shelf (COTS) program that has a unique network signature that mirrors current adversary cyber attack capabilities.
- Immersive Telepresence For Distributed Operations (ITDO) - Provides systems capable of immediate interaction and collaboration by sharing and presenting documents real-time.
- Virtualized Cyber Environment (VCE) - Provides an advanced cyber threat environment that addresses emerging technological capabilities that adversaries are developing. The VCE will facilitate Computer Network Defense, Computer Network Attack, and Computer Network Exploitation missions.

SPACE EAGLE VISION NEXT GENERATION

1. Background. Eagle Vision is the Department of Defense's only deployable commercial imagery direct downlink ground station. It provides unclassified imagery for combat operations, mission planning, intelligence preparation of battlespace, predictive battlespace awareness, geospatial awareness, homeland defense and emergency management. The station located at Redstone Arsenal, Huntsville, AL is the oldest system in inventory and its servers and processing architecture are facing obsolescence. The new architecture based on a new generation of multiprocessor servers will transform the underlying core capability from a few dedicated processors to a common processor array equivalent to sharing more than 50 individual computers. This evolution closely mirrors advances taking place throughout the international remote sensing community providing compatibility with nearly all of the commercial remote sensing satellite interfaces. This modernization will improve performance, reduce sustainment and better support Information Assurance objectives. The new baseline incorporates interfaces for eight satellite families, including 19 remote sensing satellites. The common capability provides hundreds of imaging opportunities for the station every week which is more than five times the current capability. The station will have near real-time access to most kinds of remote sensing data, including sub-meter resolution, broad area coverage, multispectral optical, synthetic aperture radar, stereo and monoscopic imagery. This data supports the dramatic growth in the missions the station can support, including maritime domain awareness, change detection, verification, identification, disaster monitoring, persistent surveillance, rapid mapping, and sensor cueing. Many of these are objectives of Theater Operationally Responsive Space. The new architecture provides the bridge for delivering timely international remote sensing products to the net centric architectures reaching maturity throughout the community. Examples of these are the NGA Commercial Imagery Libraries, NGA Rapid Delivery of On-line Capability, USAF ROVER/FalconView, USGS Hazards Data Distribution System, and NGB GIIEP.

2. Source of Need. CONOPS; USSPACECOM requirements; critical capability shortfall identified at the 2011 ARC WEPTAC.

3. Impact If Not Funded. Unit capabilities will not be able to fully meet CCDR wartime requirements, federal emergency response agency accessibility, and state continuity objectives. Additionally, this National Guard unit will be underequipped as compared to equivalent active duty unit.

4. Unit Impacted.

226 CCG Montgomery, AL.

5. Contractor. TBD.

6. Cost. PEC: 53116F

Units Required	Unit Cost	Program Cost
1 Eagle Vision Next Generation (3080)	\$16,900,000	\$16,900,000
Total		\$16,900,000

SPACE DOMAIN INFRASTRUCTURE CAPABILITY ENHANCEMENT (DICE)

1. Background. Command and Control Squadrons (CACS) provide facilities, user independent network access, global situational awareness, and information collaboration capabilities for state, federal agencies, and military forces. In their state and federal roles, the units facilitate connectivity between first responders and national, state, and local authorities during times of natural and manmade disasters. To complete their military missions, CACS personnel access and assimilate information for multiple world-wide users, across various classification levels, in support of national command directives. Users must be able to quickly and seamlessly transition between various networks from any crew position driving requirements for concurrent access to multiple networks and domains. Current cyber capacity does not meet user needs. The requested funding will support procurement of cyber infrastructure and associated National Security Agency (NSA) approved switches for simultaneous access to all required systems at 119 crew positions for one unit and 50 crew positions for a second unit. The solution will complement the existing Clear Cube solution to maintain equipment commonality and minimize system maintenance, administration, and functionality costs.

2. Source of Need. Classified CONOPS; USSPACECOM requirements; critical capability shortfall identified at the 2011 ARC WEPTAC.

3. Impact If Not Funded. Unit capabilities will not be able to fully meet combatant commander wartime requirements, federal emergency response agency accessibility, and state continuity objectives. Additionally, these National Guard operations centers will be underequipped as compared to equivalent active duty operations centers.

4. Units Impacted.

127 CACS McConnell AFB, KS 212 CACS Gowen Field, ID

5. Contractor. Clear Cube; VMWare; Geogia Tech Research Institution.

6. Cost. PEC: 53116F

Units Required	Unit Cost	Program Cost
17 DICE Units (3080)	\$119,294	\$2,027,998
Total		\$2,027,998

CYBER AND CRITICAL INFRASTRUCTURE RANGE (CCIR)

1. Background. Air, Space, and Cyberspace are domains. In the evolving Cyberspace domain, Computer Network Operations (CNO) missions and tactics must constantly evolve to keep pace with rapidly advancing cyber threats, technology and tactics. Air National Guard (ANG) CNO squadrons require a system capable of continually preparing personnel in specialized "cyber-centric" activities. The system supports the development of new tactics, techniques and procedures in a net-centric environment, and simultaneously facilitates a common cyber operating picture and sharing of capabilities among units. The system will emulate friendly and adversarial networks and cyberspace environments. The CCIR weapon system is a combination of Commercial-Off-the-Shelf (COTS) and Government-Off-the-Shelf (GOTS) Information Technology (IT) and infrastructure. This system will bring capabilities in line with active duty cyber components, and will increase the ANG's ability to protect and defend critical network-controlled domestic infrastructures. The CCIR weapon system operates as a stand-alone simulator for network exploitation and network attack. The system will also provide secure reach-back in the conduct of operational DOD Network Integrity Assessments and directly support real-time network defense.

2. Source of Need. AFSPC AFCYBER PAD, dated 9 Feb 2009; National Strategy to Secure Cyberspace, dated Feb 2003; NSPD-54/HSPD-23, dated Jan 2008; Air Force Program Action Directive 07-08, para 1.2.1, dated 9 Feb 2009; NSPD-38, dated 2004; critical capability shortfall identified at the 2011 ARC WEPTAC.

3. Impact If Not Funded. Without the CCIR, the ANG will be unable to adequately support the National Strategy to Secure Cyberspace from zero-day exploits, and cannot keep pace with adversaries' technological capability in both attacking and defending cyberspace. Critical cyber infrastructure will be lost, and the ability to perform net-centric activities will cease.

4. Units Impacted.

102 NWS	Quonset ANGB, RI	166 NWS	New Castle, DE	212 CACS	Gowen Field, ID
119 CACS	McGhee Tyson, TN	175 NWS	Martin State, MD	262 NWS	McChord AFB, WA
143 IOS	Camp Murray, WA	177 IWS	McConnell AFB, KS	273 IOS	Lackland AFB, TX

5. Contractor. TBD.

6. Cost. PEC: 53056F, 53116F

Units Required	Unit Cost	Program Cost
2 CCIR Weapons Systems (3080)	\$510,000	\$1,020,000
5 CCIR Refresh/Sustainment (3840)	\$78,000	\$390,000
7 JIOR/DREN Node hardware (3080)	\$361,000	\$2,527,000
Total		\$3,937,000

CYBER ADVERSARY REPLICATION KIT (ARK)

1. Background. The intelligence community still ranks the insider threat as the most damaging to our warfighting capability; incidents such as WikiLeaks provide a constant reminder. Air National Guard (ANG) units engaged in information operations (IO) and cyber operations require the tools to accurately portray a potential adversary's capabilities and tactics. The Adversary Replication Kit (ARK) is comprised of highly specialized commercial-off-the-shelf (COTS) software and hardware. Units equipped with the unique tools the ARK provides can better simulate the multitude of threats facing the warfighter that are resident in the IO arena to include the cyber domain. The more realistic a threat provided the better our warfighters are at identifying, assessing, and act against IO and cyber threats. Further, cyber and communication units are better prepared to fend off attacks to our communication and operations networks. DOD personnel to include network defenders will be less prepared and therefore more vulnerable to attacks.

2. Source of Need. U.S. Cyber Command, USAF (all commands), and ANG "mission assurance", Homeland Security Presidential Directive 7: Critical Infrastructure Identification, Prioritization, and Protection requires network capability to identify, assess and protect critical infrastructure. AFSPC AFCYBER PAD, dated 9 Feb 2009; National Strategy to Secure Cyberspace, dated Feb 2003; NSPD-54/HSPD-23, dated Jan 2008; Air Force Program Action Directive 07-08, para 1.2.1, dated 9 Feb 2009, NSPD-38, dated 2004, DOD 8530.1, Draft 25 Jun 10, USCC Frago 21 to JTFGNO OPOD 05-01 dated 31 Mar 2011, CJCS Exord DTG 112040 Feb 11 (Classified) Execute Order to Incorporate Realistic Cyberspace Conditions into Major DOD Exercises, CJCSI 6510.01F dated 09 Feb 2011, Department of Defense Strategy for Operating in Cyberspace, dated July 2011.

3. Impact if not Funded. If not funded personnel and "special" closed network systems will continue to be vulnerable which could lead to warfighting operations being denied, degraded, disrupted, deceived, or destroyed.

4. Units Impacted.

101 IOS	Salt Lake City, UT	166 NWS	New Castle, DE	177 IWS	McConnell AFB, KS
102 NWS	Quonset ANGB, RI	175 NWS	Martin State, MD	262 NWS	McChord AFB, WA

5. Contractor. TBD.

6. Cost. PEC: 53056F, 53116F

Units Required	Unit Cost	Program Cost
6 Suites (3080)	\$304,000	\$1,824,000
Total		\$1,824,000

CYBER REMOTE ACCESS TOOLSET (RAT)

1. Background. Information is power, and with 98% of all government communications and information being resident on the global information grid (GIG), Air National Guard (ANG) network units must have state-of-the-art tools to simulate malicious logic to accurately portray adversary's network operation capabilities. The Remote Access Toolset (RAT) is a specialized Commercial-off-the-shelf (COTS) program that has a unique network signature. The RAT will ensure our Network Warfare Operator's ability to support USAF and COCOM missions by providing a crucial new tool for assessing vulnerabilities of friendly networks while simultaneously training multiple computer network operations (CNO) mission areas such as network defenders, Hunters, malware analysis, Computer Emergency Response Teams (CERT), and defense of the GIG.

2. Source of Need. U.S. Cyber Command, USAF (all commands), and ANG "mission assurance", Homeland Security Presidential Directive 7: Critical Infrastructure Identification, Prioritization, and Protection requires network capability to identify, assess and protect critical infrastructure. AFSPC AFCYBER PAD, dated 9 Feb 2009; National Strategy to Secure Cyberspace, dated Feb 2003; NSPD-54/HSPD-23, dated Jan 2008; Air Force Program Action Directive 07-08, para 1.2.1, dated 9 Feb 2009, NSPD-38, dated 2004, DOD 8530.1, Draft 25 Jun 10, USCC Frago 21 to JTFGNO OPORD 05-01 dated 31 Mar 2011, CJCS Exord DTG 112040 Feb 11 (Classified) Execute Order to Incorporate Realistic Cyberspace Conditions into Major DOD Exercises, CJCSI 6510.01F dated 09 Feb 2011, Department of Defense Strategy for Operating in Cyberspace, dated July 2011.

3. Impact If Not Funded. If the RAT is not funded the USAF will fall drastically behind the adversary's capability which will subsequently hamper USAF ability to properly prepare their cyber warriors for operations within this domain. Improper preparation will magnify the vulnerabilities resident in the GIG to include the warfighter networks lending toward an increase in successful cyber attacks.

4. Units Impacted

177 IWS McConnell AFB, KS 262 NWS McChord AFB, WA

5. Contractor. TBD.

6. Cost. **PEC: 53056F, 53116F**

Units Required	Unit Cost	Program Cost
2 Suites (3080)	\$335,000	\$670,000
Total		\$670,000

CYBER IMMERSIVE TELEPRESENCE FOR DISTRIBUTED OPERATIONS (ITDO)

1. Background. Air National Guard (ANG) Information Operations (IO) and Network Warfare (NW) squadrons have various educational levels and cyber skill sets that are not being utilized in a synergistic manner. The ability to operate synergistically will dramatically affect the ANG's effectiveness in supporting national and state missions and objectives. ANG IO/NW units require a system that will support the ability to collaborate and share information real-time in a common operating picture environment that is immersive, life-size and completely flexible. The ITDO is a commercial-off-the-shelf system with the capability to support the development of innovative ideas that foster the advancement of tactics, techniques, and procedures for the Air Reserve Component as well as the entire Department of Defense. These systems are capable of immediate interaction and collaboration by sharing and presenting documents in real-time. Further, these systems will allow disparate units from multiple states to synchronize and prioritize efforts toward national and state cyber missions. For state missions, ITDO enables a coordinated effort via a common operating picture for multi-state support to emergency events. Additionally, ITDO provides deployed individuals a reach-back capability to subject matter experts to ensure that the information being used marries with the rapidly changing information technology environment. The ITDO systems will increase unity of effort in response to an emergency event between all ANG IO/NW units or surrounding states. This synergy between units can also be leveraged by the Department of Homeland Security, other government organizations, and respective state governments (Joint Force Headquarters, Adjutant General, and the Governor). Finally, it gives all ANG IO/NW units the ability to boost IO/NW operations mission effectiveness.

2. Source of Need. AFSPC AFNetOps UON memo requesting increased situational awareness on the network; critical capability shortfall identified at the 2011 ARC WEPTAC.

3. Impact If Not Funded. ANG units will not be able to provide a coordinated rapid response to national security/cyber events. Mission effectiveness and collaborative efforts will be substantially degraded hampering the mitigation of cascading effects to other networks.

4. Units Impacted.

101 IOF Salt Lake City, UT	175 NWS Martin State, MD	262 NWS McChord AFB, WA
102 NWS Quonset ANGB, RI	177 IWS McConnell AFB, KS	273 IOS Lackland AFB, TX
166 NWS New Castle, DE	229 IOS Northfield, VT	

5. Contractor. TBD.

6. Cost. PEC: 53056F, 53116F

Units Required	Unit Cost	Program Cost
8 ITDO (3080)	\$320,000	\$2,560,000
Total		\$2,560,000

CYBER VIRTUALIZED CYBER ENVIRONMENT (VCE)

1. Background. ANG Information operation units require equipment that will replicate adversary networks. The Virtualized Cyber Environment (VCE) will address emerging technological capabilities that our adversaries are developing. This advanced range will replicate adversary networks and support Computer Network Defense, Computer Network Attack, and Computer Network Exploitation capabilities. This VCE will provide the ability to support specialized cyber-centric activities in multiple venues hosted by USAF, STRATCOM, CYBERCOM and AFSPACECOM.

2. Source of Need. U.S. Cyber Command, USAF (all commands), and ANG “mission assurance”, Homeland Security Presidential Directive 7: Critical Infrastructure Identification, Prioritization, and Protection require network capability to identify, assess and protect critical infrastructure. Source of Requirement: AFSPC AFCYBER PAD, dated 9 Feb 2009; National Strategy to Secure Cyberspace, dated Feb 2003; NSPD-54/HSPD-23, dated Jan 2008; Air Force Program Action Directive 07-08, para 1.2.1, dated 9 Feb 2009, NSPD-38, dated 2004, DOD 8530.1, Draft 25 Jun 10, USCC Frago 21 to JTFGNO OPORD 05-01 dated 31 Mar 2011, CJCS Exord DTG 112040 Feb 11 (Classified) Execute Order to Incorporate Realistic Cyberspace Conditions into Major DOD Exercises, CJCSI 6510.01F dated 09 Feb 2011, Department of Defense Strategy for Operating in Cyberspace, dated July 2011.

3. Impact if not Funded. Air Force and warfighter networks will be less prepared and therefore more vulnerable to cyber attacks. The more vulnerable systems could lead to warfighting operations being denied, degraded, disrupted, deceived, or destroyed by cyber attacks.

4. Units Impacted.

102 NWS Quonset ANGB, RI 175 NWS Martin State, MD 177 IWS McConnell AFB, KS
166 NWS New Castle, DE

5. Contractor. TBD

6. Cost. **PEC: 53056F / 53116F**

Units Required	Unit Cost	Program Cost
4 Suites (3080)	\$436,000	\$1,744,000
Total		\$1,744,000